C-20CL5
C-20WL5

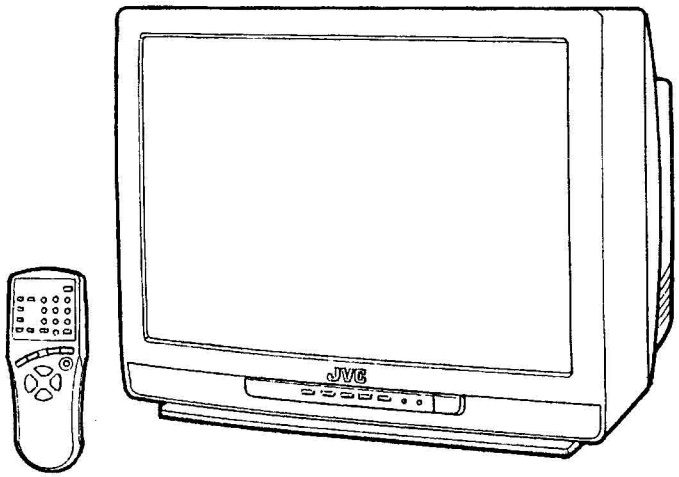
JVC

SERVICE MANUAL

COLOR TELEVITION

C-20CL5(US&CA)
C-20WL5(US)

BASIC CHASSIS
GL



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SPECIFICATIONS

Item	Content
Dimensions (W × H × D)	19-7/8" × 17-7/8" × 19-3/8" / 50.4cm × 45.1cm × 49.1cm
Weight	46.4lbs / 21.1kg
TV System and Color system	
TV RF System	CCIR (M)
Color System	NTSC
TV Receiving Channels and Frequency	
VL Band	(02 ~ 06) 54MHz ~ 88MHz
VH Band	(07 ~ 13) 174MHz ~ 216MHz
UHF Band	(14 ~ 69) 470MHz ~ 806MHz
CATV Receiving Channels and Frequency	
(Quartz Synthesizer system)	
Low Band	(02 ~ 06,A-8) by (02 ~ 06&01)
High Band	(07 ~ 13) by (07 ~ 13)
Mid Band	(A ~ 1) by (14 ~ 22)
Super Band	(J ~ W) by (23 ~ 36)
Hyper Band	(W + 1 ~ W + 28) by (37 ~ 64) (54MHz~804MHz)
ULTRA Band	(W + 29 ~ W + 84) by (65 ~ 125)
Sub Mid Band	(A8,A4 ~ A1) by (01,96 ~ 99)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
Color Sub Carrier	3.58MHz
Antenna Input Impedance	75Ω (VHF/UHF) Terminal,F-Type Connector
Power Input	120V AC,60Hz
Power Consumption	105W(US)
Input Current	1.4A(CA)
Picture Tube	20"(51cm) measured diagonally
Viewable Picture Size (W × H)	16" × 12" / 40.7cm × 30.5cm
High Voltage	28.0kV ± 1kV (at zero beam current)
Speaker	2" × 3-9/16"(5cm × 9cm)oval × 1
Audio Power Output	1.5W
Video Input	1Vp-p, 75Ω
Audio Input	500mVrms(-4dBs), high impedance
Tube	1
IC	14 (In TV), 1 (In REMOCON)
Transistor	20 (In TV), 1 (In REMOCON)
Remote Control Unit	RM-C475 (C-20CL5) RM-C475W (C-20WL5)

Design & specification subject to change without notice.

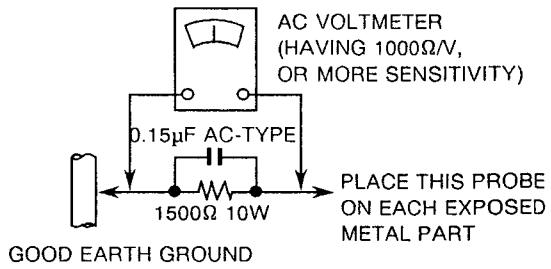
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection,no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual many create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contrained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side grounding or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⊥) side GND, the ISOLATED (NEUTRAL) (⏚) side GND and EARTH (⏚) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B_1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs,metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

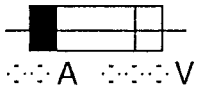
• **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item "**How to check the high voltage hold down circuit**".

■ **ONLY CANADA**

This mark shows a fast operating fuse, the letters indicated below show the rating.



OPERATING INSTRUCTIONS

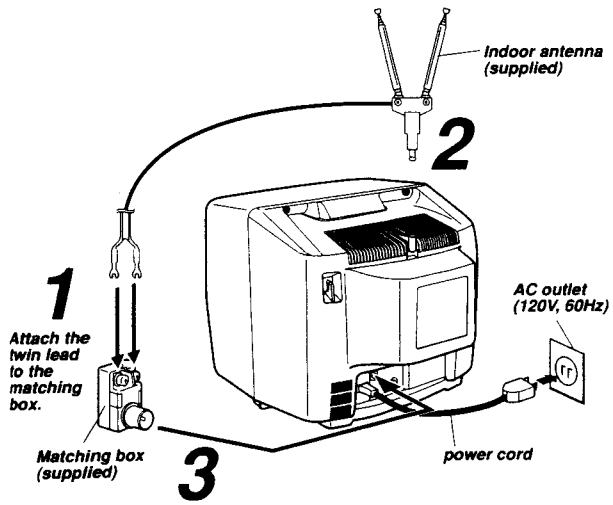
■ The operating instructions are the same as for C-13CL5(US&CA), C-13WL5(US&CA)(No.50841). Therefore, please refer to the C-13CL5(US&CA), C-13WL5(US&CA)(No.50841) SERVICE MANUAL for detailed instructions.

NOTE: The One-Screen display in CANADA model is shown in English only, no Spanish text is available.

PREPARATION

1. Connecting antenna and power cord

Rear panel and Indoor antenna

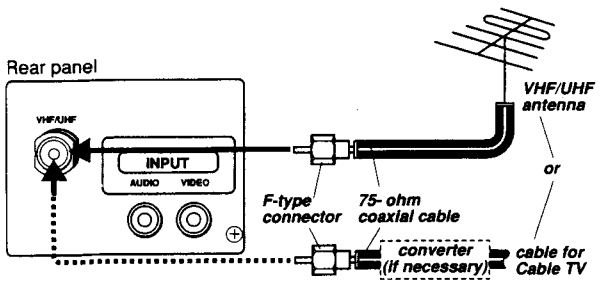


Notes:
- The power cord is supplied with a polarized plug. Therefore, it will only insert one way into the wall outlet. DO NOT DEFEAT THE POLARIZED PLUG. If you have difficulty, consult your local dealer.
- Illustrations for front panel and rear panel used in this user guide are of the C-13CL5. The buttons of the other models are the same in layout and function, but different in size and shape.

How to use the supplied indoor antenna:
- Once the indoor antenna is attached to TV, it sill never be detached.
- When watching a VHF broadcast program, adjust the length, the angle and the direction of the antenna to get the best possible picture.
- When watching a UHF broadcast program, shorten the antenna as much as possible and change the angle horizontally. Adjust the direction to get the best possible picture.

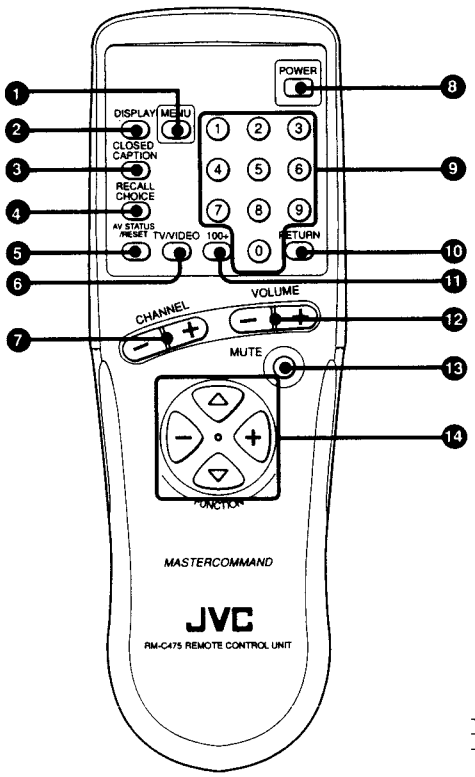
To connect outdoor antenna and cable TV

(Example)

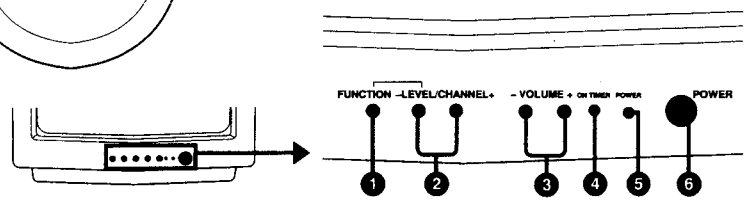


Notes:
- When connecting both a cable (75-ohm coaxial) and a UHF antenna (300-ohm feeder), use an optional antenna mixer (CE41467) to make a single connection. With this antenna mixer, reception of cable channels higher than "Channel W+17" is not possible.
- Some cable companies require a converter box to receive all available programs. Others may require it for subscription or "premium" programming. Consult your local cable company for correct installation.

To connect a VCR:
Refer to "CONNECTION DIAGRAM" on page 16.



❶	MENU button
❷	DISPLAY button
❸	CLOSED CAPTION buttons
❹	RECALL CHOICE button
❺	AV STATUS/RESET button
❻	TV/VIDEO button
❼	CHANNEL (–/+) buttons
❽	POWER button
❾	Number keys
❿	RETURN button
⓫	100+ button
⓬	VOLUME (–/+) buttons
⓭	MUTE button
⓮	FUNCTION (▼▲ –/+) buttons



• This illustration above is of C-13CL5.

• Press FUNCTION button to display a list of functions. While the list is being displayed, press the button again to select the desired function; then change the level or setting with LEVEL/CHANNEL (–/+).

❶	FUNCTION button
❷	LEVEL/CHANNEL (–/+) buttons
❸	VOLUME (–/+) buttons
❹	ON/TIMER lamp
❺	POWER lamp
❻	POWER button

JVC COMPANY OF AMERICA
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C13,20L5UIBA-H Ⓐ 1
0394-NK-G-S

FEATURES

- New chassis design enables use of a single board with simplified circuitry.
- Provided with miniature tuner (TV/CATV).
- PLL synthesizer system TV/CATV totaling 180 channels.
- Multifunctional remote control permits picture adjustment.
- Adoption of the CHANNEL GUARD function prevents the specific channels from being selected, unless the "ID number" is key in.
- Adoption of the AV STATUS function that can store 2 variations for preset picture adjustment, to change the picture tone to your preference.
- Adoption of the HOME SITTER function enable to be turned on and off automatically at present times everyday.
- ON/SLEEP TIMER for setting in real time.
- With 75Ω V/U in common (F-Type) ANT Terminal.
- Closed-caption broadcasts can be viewed.
- Audio Video input terminal.

DIFFERENCE LIST OF MAIN PARTS

⚠	PART NAME	C-20CL5(US)	C-20WL5(US)	C-20CL5(CA)
	MAIN PWB ASS'Y	SGL-1102A-H2	SGL-1102A-H2	SGL-1602A-H2
⚠	TERMINAL BOARD	CM22750-B01-VH	CM22750-B02-VH	CM22750-B01-VH
⚠	POWER CORD	QMP1490-170J5	QMP1499-170J5	QMP1490-170J5
⚠	FRONT CABI. ASS'Y	CM12519-A0E-MH	CM12519-C0B-MH	CM12519-A0E-MH
	POWER KNOB	CM35936-B01-H	CM35936-002-H	CM35936-B01-H
	PUSH KNOB	CM35937-A01-H	CM35937-002-H	CM35937-A01-H
	CONTROL WINDOW	CM22748-D01-H	CM22748-002-H	CM22748-D01-H
	JVC MARK	CM43094-006-H	CM43094-007	CM43094-006-H
⚠	REAR COVER	CM12521-C01-MH	CM12521-C02-MH	CM12521-C01-MH
⚠	RATING LABEL	CM22794-001-H	CM22794-001-H	CM22558-001-H
	REMOCON UNIT	RM-C475-01-H	RM-C475W-01-H	RM-C475-01-H
⚠	INST. BOOK	C13,20L5UIBA-H	C13,20L5UIBA-H	C13,20L5CIBA-H
	PACKING CASE	CP10974-060-H	CP10974-061-H	CP10974-062-H
	REC KEEPING CARD	CP30702-001	CP30702-001	———
	REGISTRATION CARD	BT-51006-1H	BT-51006-1H	———
	WARRANTY CARD	———	———	BT-20025L-H
	POS, SERIAL LABEL	———	———	CM47385-00A
	SVC CENTER LIST	———	———	BT-20071B-H
⚠	ROD ANTENNA	CM36042-00A-H	CM36042-00A-H	———
	MATCHING BOX	CE42024-00BJ1	CE42024-00BJ1	———

TECHNICAL INFORMATION

■ MICRO PROCESSING CONTROL UNIT (IC701 : MN1873237JKH6)

• The microprocessor circuit of this model is composed mainly of a 64 pins control CPU(MN1873237JKH6).

Pin No.	Port name	IN/OUT	Function	Pin No.	Port name	IN/OUT	Function
1	VDD	IN	+5V INPUT	33	P01/SDA	IN	N. C.
2	SD/P15	IN	SYNCDET INPUT	34	P00/SCL	IN	AC INPUT
3	ACIN/P15	I/O	N. C.	35	P44	I/O	N. C.
4	P67	I/O	SYSTEM CONSTANT OUT (3)	36	P13/VOW3	OUT	ON SCREEN B. OUT
5	P66	OUT	SYSTEM CONSTANT OUT (2)	37	P43	IN	SD OUT
6	P50	OUT	SYSTEM CONSTANT OUT (1)	38	P36	OUT	PICTURE MUTE OFF/ON
7	P65	OUT	ON TIMER OFF/ON	39	P35	OUT	AUDIO MUTE OFF/ON
8	RST/P07	IN	RST INPUT	40	HSYNC/P17	IN	HSYNC INPUT
9	P64	OUT	POWER OFF/ON	41	P34	OUT	OSD BACKGROUND
10	P63	I/O	TV/VIDEO SWITCH (2)	42	P10/VOB	OUT	ON SCREEN BACKGROUND OUT
11	P62	OUT	TV/VIDEO SWITCH (1)	43	P12/VOW2	OUT	ON SCREEN G. OUT
12	P61	I/O	MTS SWITCH (2)	44	P11/VOW1	OUT	ON SCREEN R. OUT
13	P60	I/O	MTS SWITCH (1)	45	P05/RMIN/IRQI	IN	RMIN
14	P8DAC3/P23	OUT	TINT CONTROL	46	ADIN5	IN	KEY IN(2)
15	P8DAC6	OUT	COLOR CONTROL	47	ADIN4	IN	KEY IN(1)
16	P8DAC2/P22	OUT	PICTURE CONTROL	48	VIDEO IN	IN	C. C. D. VIDEO SIGNAL INPUT (2Vp-p)
17	P8DAC5/P25	OUT	BRIGHT CONTROL	49	A7DAC	OUT	N. C.
18	P8DAC1/P21	OUT	DETAIL CONTROL	50	P42	OUT	TUNER(CLOCK)
19	P8DAC4/P24	OUT	VOLUME CONTROL	51	CM	IN	GND
20	P8DAC0/P20	OUT	BASS CONTROL	52	P33	OUT	AGC MUTE
21	TDAC/P16	OUT	WHITEBACK	53	OSC2	OUT	SYSTEM CLOCK (IN)
22	ADIN3	——	GND	54	OSC1	IN	SYSTEM CLOCK (OUT)
23	ADIN2	IN	CRT NECK PROTECTION	55	P32	OUT	TV/CAPTION
24	ADIN1	IN	XRAY PROTECTION	56	P31	OUT	MEMORY(CS)
25	ADIN0	IN	AFC(S CURVE) INPUT	57	P02/SBT	IN	MEMORY(DO)
26	P8DAC8	OUT	TREBLE CONTROL	58	P30	OUT	MEMORY(SCK)
27	P8DAC7	OUT	BALANCE CONTROL	59	P51	OUT	MEMORY(DI)
28	VSYNC/P04	IN	VSYNC INPUT	60	P03/SBD	OUT	TUNER(LOCK)
29	P47	IN	SYSTEM CONSTANT IN (3)	61	P06/IRQO	IN	POWER STOPPAGE DETECTION
30	P46	IN	SYSTEM CONSTANT IN (2)	62	P41	OUT	TUNER(ENABLE)
31	SYNC	OUT	N. C.	63	P40	OUT	TUNER(DATA)
32	P45	IN	SYSTEM CONSTANT IN (1)	64	VSS	——	GND

TV/VIDEO SWITCHING OUT

Mode \ Pin No.	⑪ Pin(P62)	⑩ Pin(P63)
TV	L	L
VIDEO 1	H	L
VIDEO 2	L	H
(VIDEO 3)	H	H

SELF CHECK DETECT VOLTAGE

	OK	NG
XRAY PROTECTION (ADIN1 ㉔ PIN)	0~3.65V	3.65~5.0V
CRT NECK PROTECTION (ADIN2 ㉓ PIN)	2.5~5.0V	0~2.5V

SPECIFIC SERVICE INSTRUCTIONS

■ DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power supply cord.
2. Remove the eight screws marked Ⓐ as shown in Fig. 1.

* When reinstalling the rear cover, carefully push it inward after inserting the main board into the rear cover groove.

REMOVING THE MAIN P.W. BOARD

1. Remove the speaker wire from the speaker terminal.
2. Release the two hooks indicated by arrows Ⓐand draw out the main P.W.Board. (Fig. 2)
   (If necessary, take off the wire clamp and connectors,etc.)

* Insert the control P.W.board into the slot correctly, then reinstall the main P.W.board.

REMOVING THE AV TERMINAL BOARD

1. Refer to Fig. 3 and use a screwdriver or similar tool to slightly raise tab Ⓐ in 2 locations. Pull the AV terminal board in the direction indicated by the arrow to disengage and removed it from the main P.W.board.

SETTING UP THE CHASSIS FOR CHECK / REPAIR

* As shown in Fig. 4, set the removed chassis upright.
When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket P.W.board and the main P.W.board.

WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

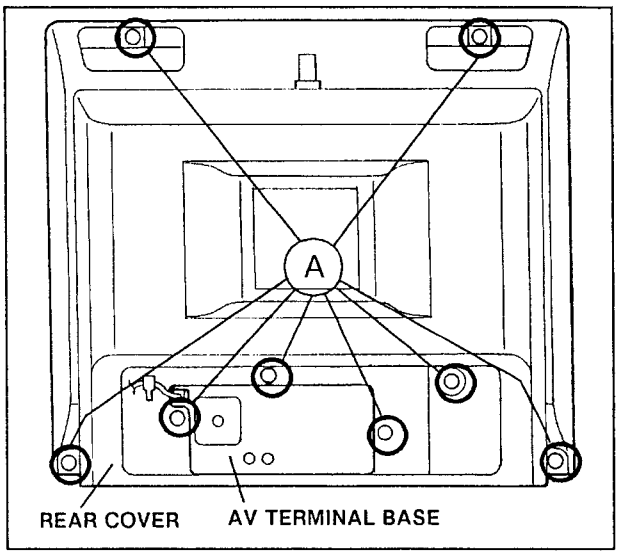


Fig. 1

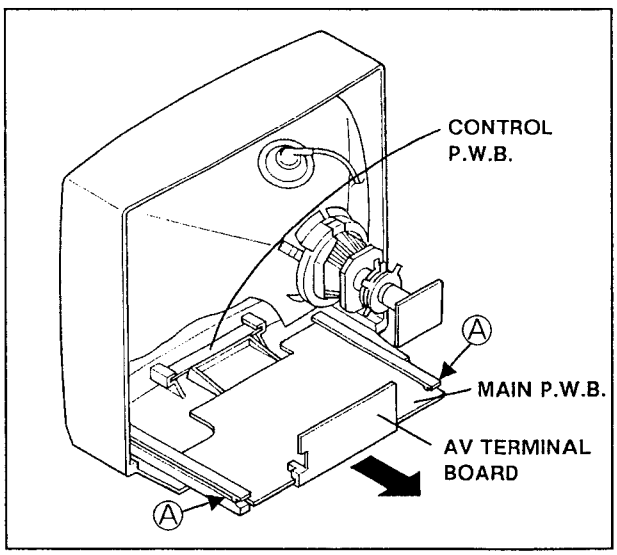


Fig. 2

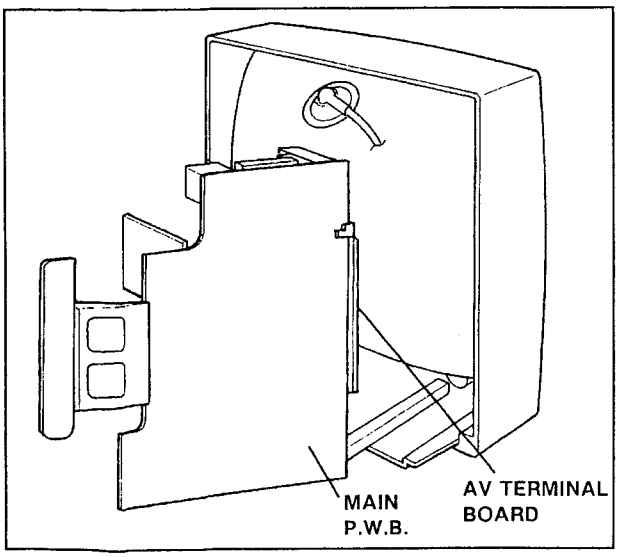


Fig. 4

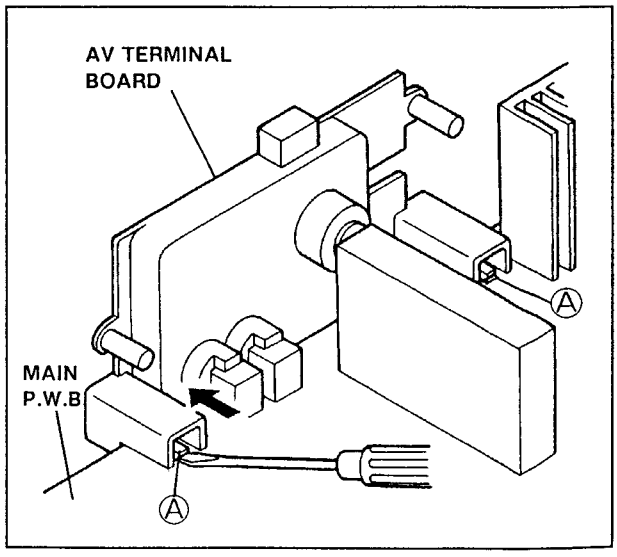


Fig. 3

■ MEMORY IC REPLACEMENT

This model uses a non-volatile memory IC. If this memory IC is replaced, the data must be rewritten.
A normal picture will not be obtained unless the correct data are entered into the replacement IC.

MAIN PWB IC703(ST93C56-10PC)

This IC is used mainly as a last setting memory. The following items are set by the user and stored in the memory.

1. Symptoms of faulty IC.
   Picture and sound obtained, but picture is not normal.

2. Replacement procedure
   1) Before replacing the IC, receive a broadcast and to the extent possible, make a note of the memory values indicated in the table.
   2) Switch off the power and disconnect the power cord from the AC outlet.
   3) Replace IC703.
   4) Reconnect the power cord to AC and switch on the power.
   5) Use the remote controller and enter the values noted in above step 1. For items unable to note, use the factory settings indicated in the table.

Setting items	Factory settings
MENU1	C1
MENU3	ALL 5 to CH02
MENU5	1, 2 → CANCEL 7:00 AM CH02 <NO>
MENU7	CANCEL ON 7:00 PM OFF 10:00 PM CH02 <NO>
MENU8	ALL 3 CANCEL
INI MENU1	AUTO PROG engaged
INI MENU4	BLACK BACK GROUND
INI MENU5	OFF
INI MENU6	A and B to center values
INI MENU8	ENGLISH
CAPTION	OFF
SELF CHECK	CLEAR
AV-STATUS	RESET
SUB VR ADJ	Refer to setting method on page 12.

SERVICE ADJUSTMENTS

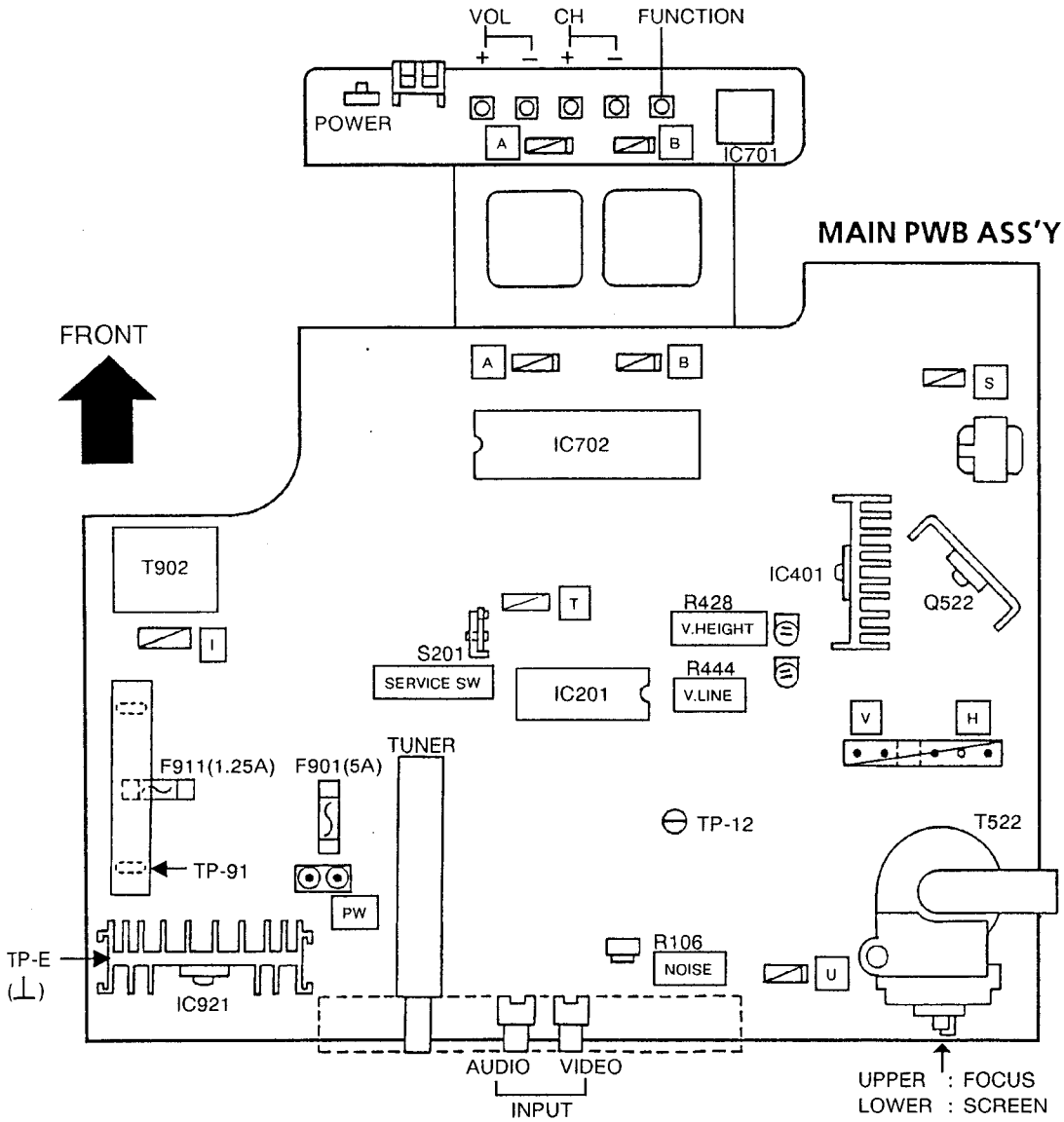
TOOLS AND FIXTURES FOR ADJUSTMENT

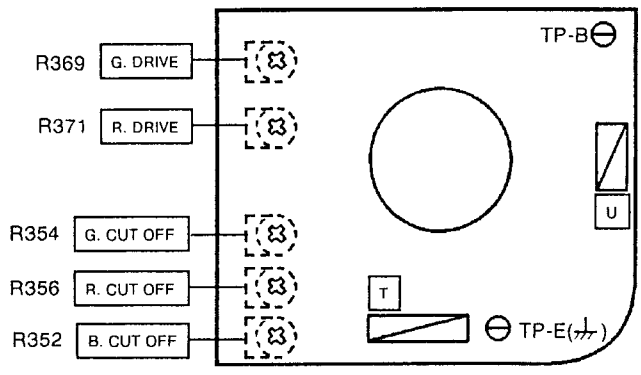
- DC VOLTMETER
- PATTERN GENERATOR(NTSC)

NOTE

- Before commencing any adjustment, set the FUNCTION (BRIGHT, PICTURE, COLOR, etc.) to the standard LEVEL by pressing the RESET button on the remote controller.

■ ADJUSTMENT LOCATION

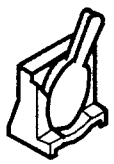




TOP

CRT SOCKET PWB ASS'Y
(SOLDER SIDE)

■ ADJUSTING STEP WITH VRs AND OTHER PARTS

Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY	DC Voltmeter	TP-91		* Receive a monoscope pattern. 1. Connect a tester to TP-91 and TP-E (⊥) to check that the voltage is DC 130.0V ±1V. * The tester must have an internal resistance of 20kΩ/V or above.
NOISE (RF AGC)			NOISE VR (R106)	1. Turn the NOISE VR so that noise appear in the picture. 2. Then adjust the NOISE VR in the direction where noise disappears from the picture, and stop it where noise has disappeared from the picture. 3. Select another channel, and make sure that there occurs no trouble.
V. HEIGHT & V. LINEARITY	Pattern Generator		V. HEIGHT VR (R428) V. LINE. VR (R444)	1. Receive a picture that enable vertical symmetry to be checked. 2. Turn the V. HEIGHT VR to compress the picture vertically. 3. Adjust the V. LINE. VR to where the picture is symmetrical top and bottom. 4. Again adjust the V. HEIGHT VR to return the normal height.
FOCUS			FOCUS VR	1. Adjust the FOCUS VR to obtain clear pictures. 2. Check that pictures have been adjusted to optimum appearance in both central and periphcral areas of the screen.
HORIZONTAL LINE			SERVICE SWITCH (S201)	1. Turning the SERVICE SWITCH from the N side to the S side will bring the horizontal line display to the screen. Ⓢ Will appear a H. LINE  Ⓝ Normal picture

■ TINT, COLOR, PICTURE AND BRIGHT SUB-ADJUSTMENTS

• Tint, Color, Picture and Bright sub-adjustments are enabled by setting the service mode with the remote controller.

1. SERVICE MODE SETTING

1) Press the [MENU] key.
2) Select 6. Set Clock (press [CH6]).
3) Set to 3:21 AM.
4) Press the [MUTE] key.
5) Press the [FUNCTION ▽/△] keys to obtain the service mode screen indicated in Fig. 1.
6) After the service screen is displayed (about 5 seconds), press the [FUNCTION ▽/△ or +/–] keys to produce the service menu screen indicated in Fig. 2.

2. ADJUSTMENTS

1) Select 1. SUB VOLUME(Press [CH1] key) to produce the adjustment screen indicated in Fig. 3.
2) Select TI, CO, PI or BR with the [FUNCTION ▽/△] keys (selected item is indicated in red).
3) Adjust for optimum picture with the [FUNCTION +/–] keys.
4) Press the [MENU] key or set [POWER] off to store the adjustments and release the service mode.

[NOTE]

1. Do not use 3 or 4 on the SERVICE MENU screen shown in Fig. 2.
   If you have selected 3, disconnect the power cord to cancel it.
   If you have selected 4, execute AUTO PROGRAM.

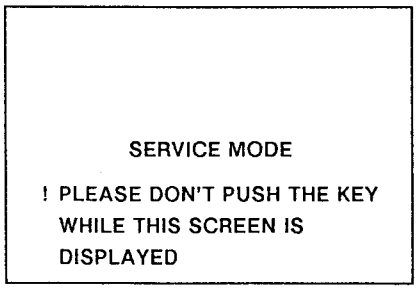


Fig.1

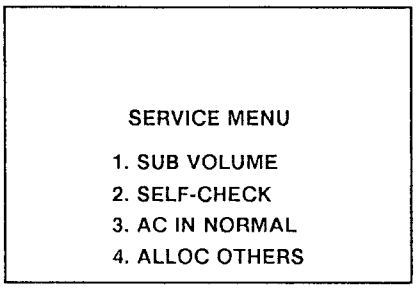


Fig.2

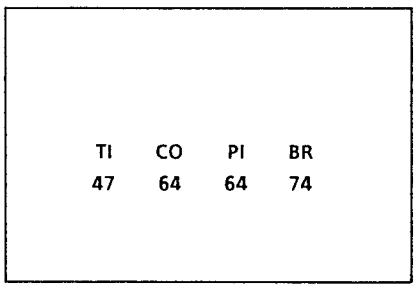


Fig.3

Note : The TI, CO, PI or BR indicated values may not necessarily coincide with the figure. Although these are nominal standard adjustment values, exact correspondence is not essential.

Variable range			
TI	0-128	PI	0-128
CO	0-128	BR	0-128

■ HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing of the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

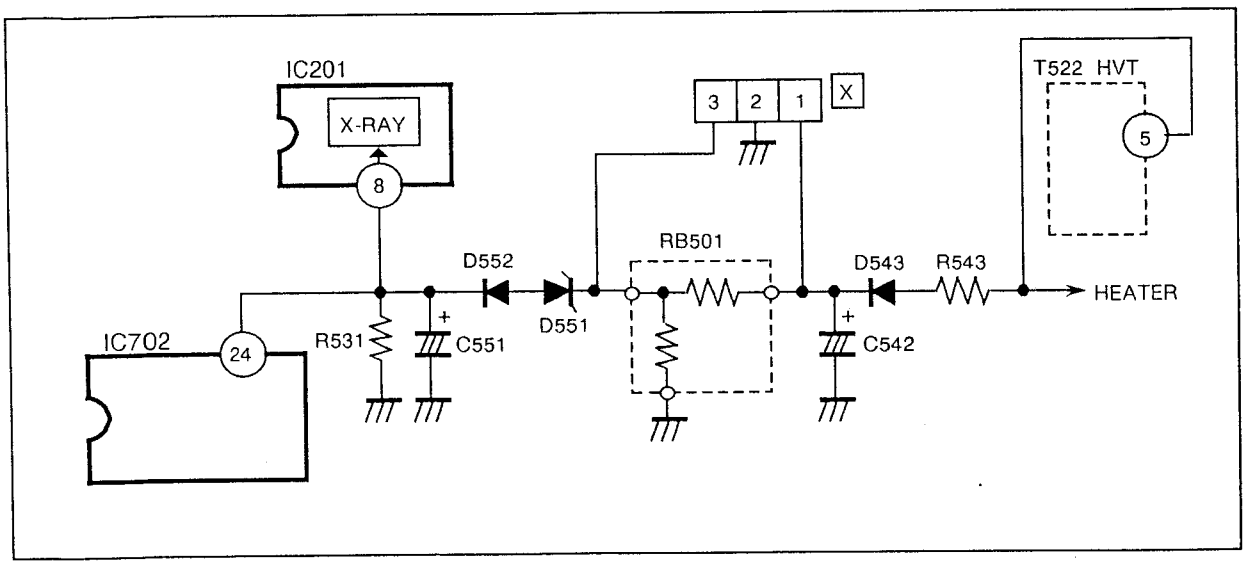


Fig. 1

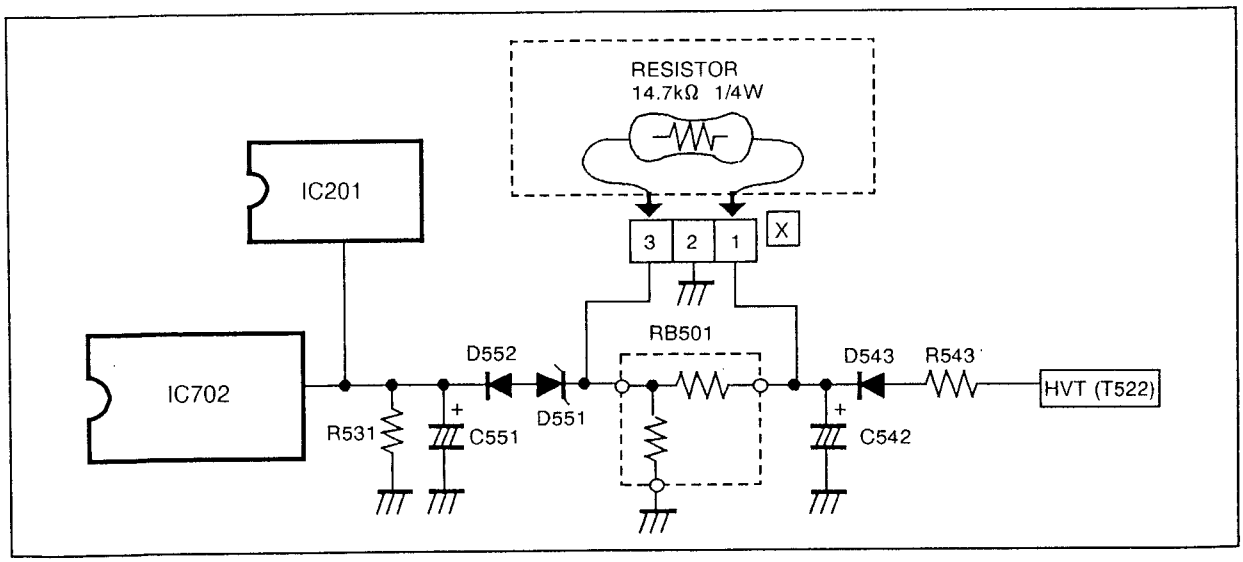


Fig. 2

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT.

1) Make sure that the power SW is at OFF.
2) As shown in Fig. 2, set the resistor 14.7kΩ 1/4W to RB501 (between X1 connector and X3 connector).
3) Turn the power SW ON.
4) Make sure that the screen picture disappears.
5) Turn the power SW OFF.
6) Remove the resistor 14.7kΩ 1/4W from RB501 (between X1 connector and X3 connector).

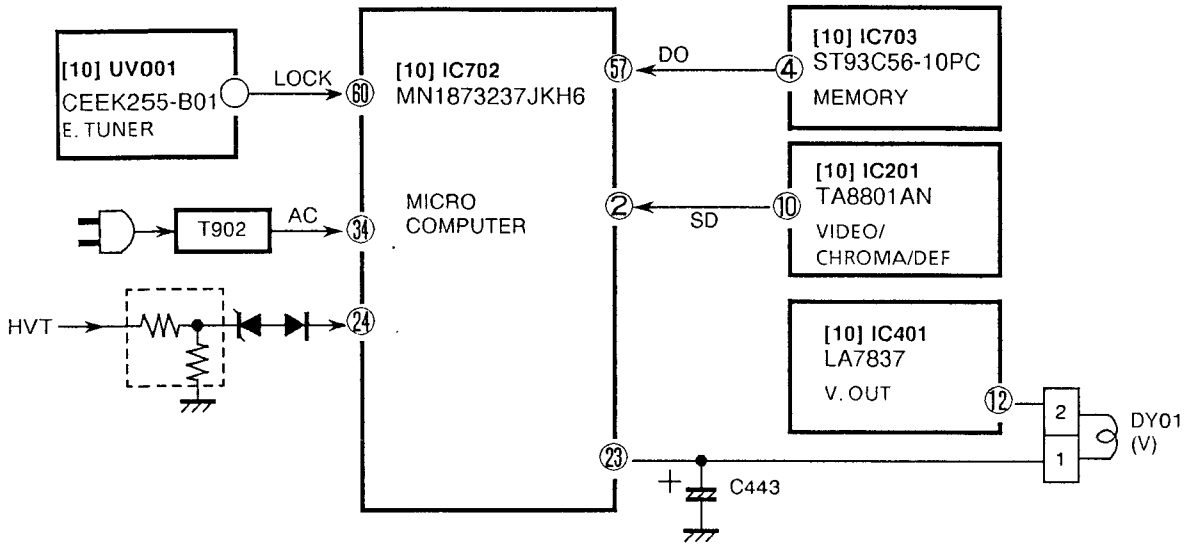
SERVICE PROCEDURES

■ SELF CHECK FUNCTIONS

1. OUTLINE

This model includes self check functions for checking circuit operating states and in event of malfunction , display and store the relevant data in memory. The data are displayed on-screen and by LED indication. Faults are detected according to the input states of control lines connected to the CPU.

◆ SYSTEM CONNECTION ◆



2. USAGE

1) Self check display mode entry [Method 1]
   (1) Set the power to stand-by (switch power on with the remote controller).
   (2) While pressing the TV mainframe [VOLUME + or −] key, press the remote controller [POWER] key.
   (3) The Fig. 3 self check display mode is produced.

[Method 2]
   (1) Press the [MENU] key.
   (2) Select 6. Set Clock(press [CH6]).
   (3) Set to 3:21 AM.
   (4) Press the [MUTE] key.
   (5) Press the [FUNCTION ▽/△] keys to obtain the service mode screen indicated in Fig. 1.
   (6) After the service screen is displayed(about 5 seconds), press the [FUNCTION ▽/△ or +/ −]keys to produce the service menu screen indicated in Fig. 2.
   (7) Select 2. SELF CHECK(Press [CH2] key) to produce the Fig. 3 self check display mode.

2) Releasing self check display mode
   • To save the fault history :
   Press the main power switch of the TV mainframe to cut off the power and disconnect the power cord from the AC outlet.
   • To erase(reset) the fault history :
   Press the remote controller power key to cut off the power.

SERVICE MODE

! PLEASE DON'T PUSH THE KEY WHILE THIS SCREEN IS DISPLAYED

Fig.1

SERVICE MENU

1. SUB VOLUME
2. SELF-CHECK
3. AC IN NORMAL
4. ALLOC OTHERS

Fig.2

3) Fault history

The fault history counts the incidences per item up to 9 times. If 9 times are exceeded, the count remains at 9. Unless erased, the fault history remains in the memory.

Note : The sync(sync signal presence or absence) history is not counted.

4) Operation note

In addition to a circuit malfunction (faulty operation), pulse or other type interference can be interpreted as a fault, resulting in an X display or count. therefore, if X is displayed for many items, diagnosis can be impeded. In cases where symptoms are expected to recur periodically, reset the fault history to allow storing new diagnostic results.

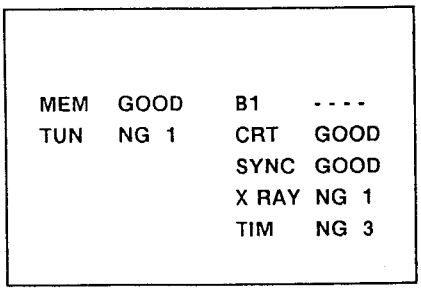


Fig.3 (Self check display mode)

* Since sync is not counted, the fault incidences are not displayed.
* "B1" is displayed on the screen, but does not function.

3. CONTENTS

Self check is performed regarding the items indicated in the table.

Check item	Display name	Contents(check location)	Check signal(line)	Detection method
MEMORY	MEM	Normal memory read /write operation [IC703 AT93C56-10PC]	DO	Special pattern written into specific address at factory is readout and compared.
TUNER	TUN	Normal tuner operation [UV001 CEEK255-B01]	LOCK	Check for lock signal produced within a fixed time period(350ms) during channel selection.
CRT NECK PROTECTION	CRT	Vertical deflection operation	V. S. COR. VOLTAGE	Detection starts 5 seconds after main power on and sub power on. Error interpreted if faulty pulse input for more than 1ms.
SYNC SIGNAL PRESENCE OR ABSENCE	SYNC	Presence or absence of video(sync) signal input [IC201 TA8801AN]	SD	Check for high potential from IC SD output pin after the self check display mode. * Pressing the picture display key erases(resets) the fault history.
X RAY PROTECTION	X RAY	Xray protector circuit operation	B1 VOLTAGE	Detection starts 5 seconds after main power on and sub power on. Error interpreted if faulty pulse input for more than 1ms.
TIMER	TIM	Power supply frequency fluctuation(change)	AC	AC pulse counted periodically. Except for directly after CPU reset, Power supply frequency change from 50 to 60Hz, or from 60 to 50 Hz is checked during operation.

● In states where a raster is not produced due to set malfunction, the on timer LED flashes to indicate the fault mode as indicated in the table. The cause is stored and displayed in cases when the power supply is cutoff during a malfunction.

Check item	LED flashing interval
XRAY PROTECTION	0.1 second
CRT NECK PROTECTION	2 seconds

PURITY, CONVERGENCE AND WHITE BALANCE

* The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of SERVICE ADJUSTMENT or the SCHEMATIC DIAGRAM.

PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergency magnets assembly has been set at the factory and requires no field adjustments. However, should the assembly be accidentally jarred or tampered with, some or all adjustments may by necessary.

COLOR PURITY & VERTICAL CENTER

Loosen yoke retaining screw (Fig. B-1) . With a sharp knife cut between the picture tube and the wedge. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place (Fig. B-1) . The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforehand loosen it.)

1. Select no signal UHF channel. (or Display a monochrome pattern)
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VRs to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3)
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.) Unless correct, bring it to the nearest center by rotating the two tabs, kept at an angle, together in either direction. (Fig. B-4)
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw (do not install wedges at this time) .

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)

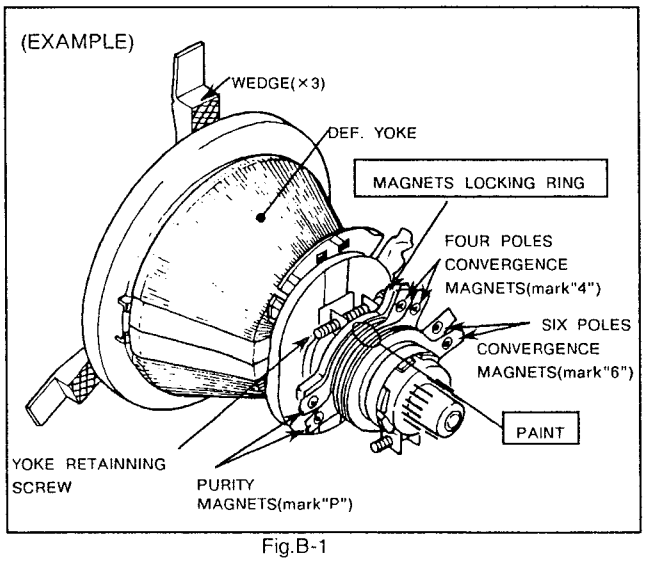


Fig.B-1

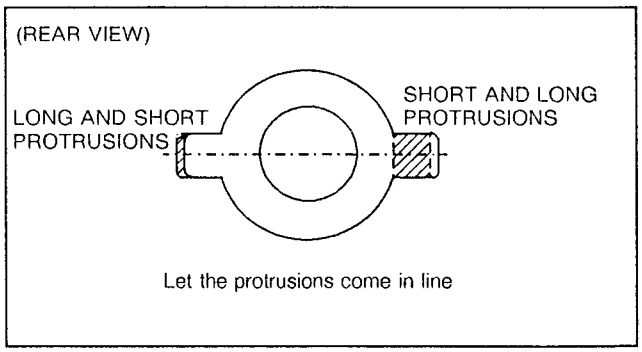


Fig.B-2

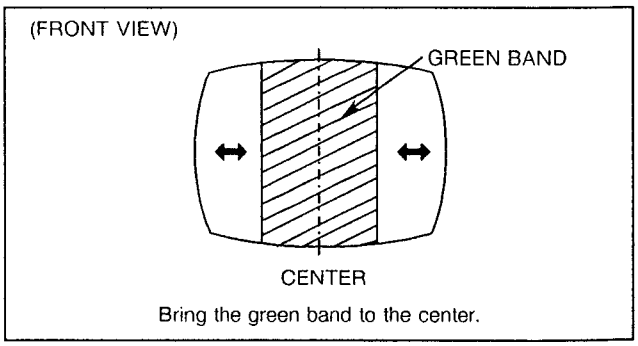


Fig.B-3

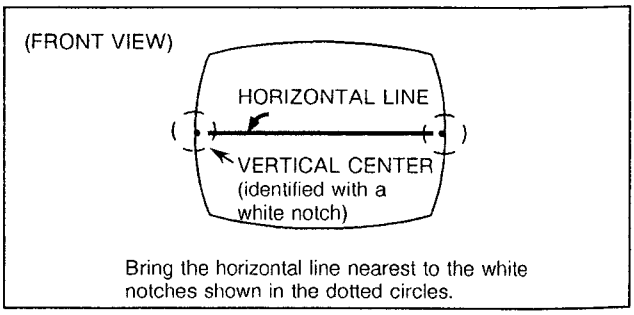

(FRONT VIEW)
HORIZONTAL LINE
VERTICAL CENTER
(identified with a white notch)
Bring the horizontal line nearest to the white notches shown in the dotted circles.

Fig.B-4

STATIC CONVERGENCE & DYNAMIC CONVERGENCE

1. Connect a crosshatch generator to the input terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. (Fig. B-7, 8, 9)
3. Rotate the front pair of tabs (four pole convergence magnet) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs (Fig. B-5)
4. Rotate the rear pair of tabs (six pole convergence magnets) as a unit to minimize the separation of the magenta (R/B) and green lines. (Fig. B-6)
5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
6. Apply paint to fix six magnets.
   (As to models equipped with a magnet locking ring, tighten it.)
7. Remove the wedge installed temporarily on the yoke.
8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9)
9. Insert wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
10. Wedge has a backing of double sided adhesive tape. Therefor, tear off one side of adhesive tape, and fix the wedges.
11. White balance adjustment (Black & White tracking) can now be performed.

WHITE BALANCE ADJUSTMENT

(Black and White Tracking)

1. Display a monochrome pattern.
2. Set the RED and GREEN DRIVE VRs for their mechanical center.
3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
4. Display a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.)
5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
6. Turn the CUT-OFF VR of the color which has appeared first, clockwise by about 10°and then adjust the SCREEN VR again so that the color may shine faintly.
7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
8. Return the monochrome pattern. (When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear.)
9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

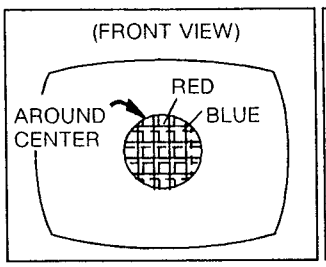


Fig.B-5

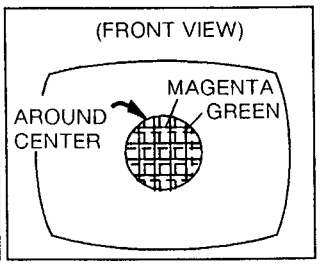


Fig.B-6

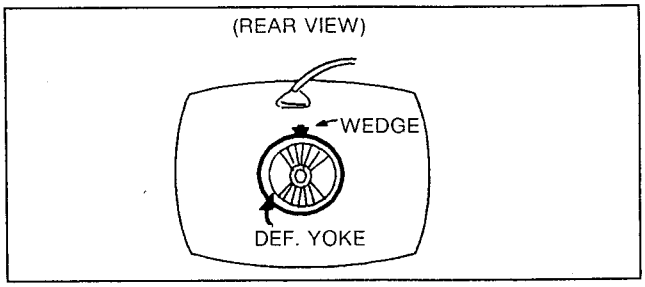


Fig.B-7

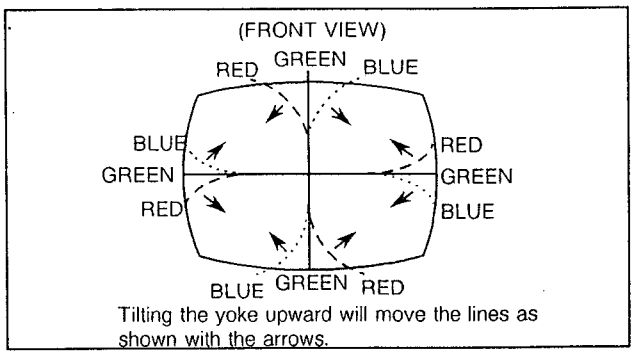


Fig.B-8

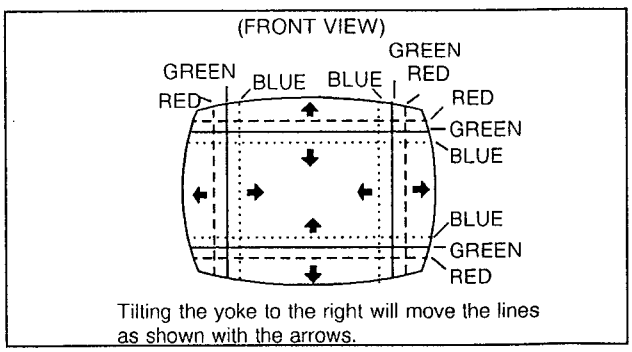


Fig.B-9

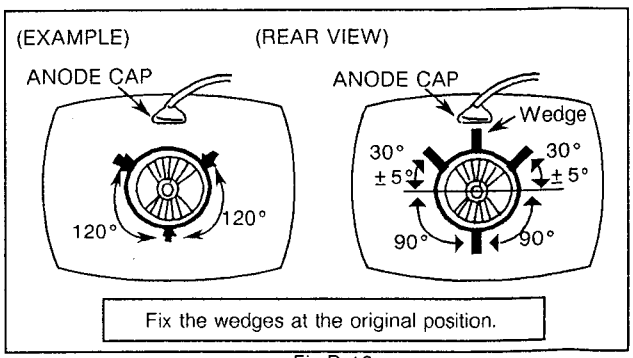


Fig.B-10

0CL5
0WL5

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines —— in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .
- As a rule, the resistors and capacitors which are indicated as shown in "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board .
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

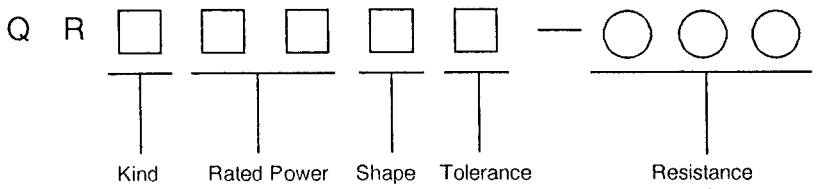
ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

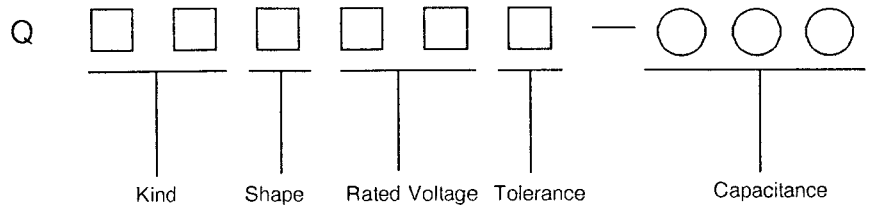
Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

EX.

2.2 Ω = 2R2
470 Ω = 47×10^{1} → 471
150kΩ = 15×10^{4} → 154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

5Figure / 6Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

EX

5pF = 5R0
1000pF = 10×10^{2} → 102
47μF = 47×10^{6} → 476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

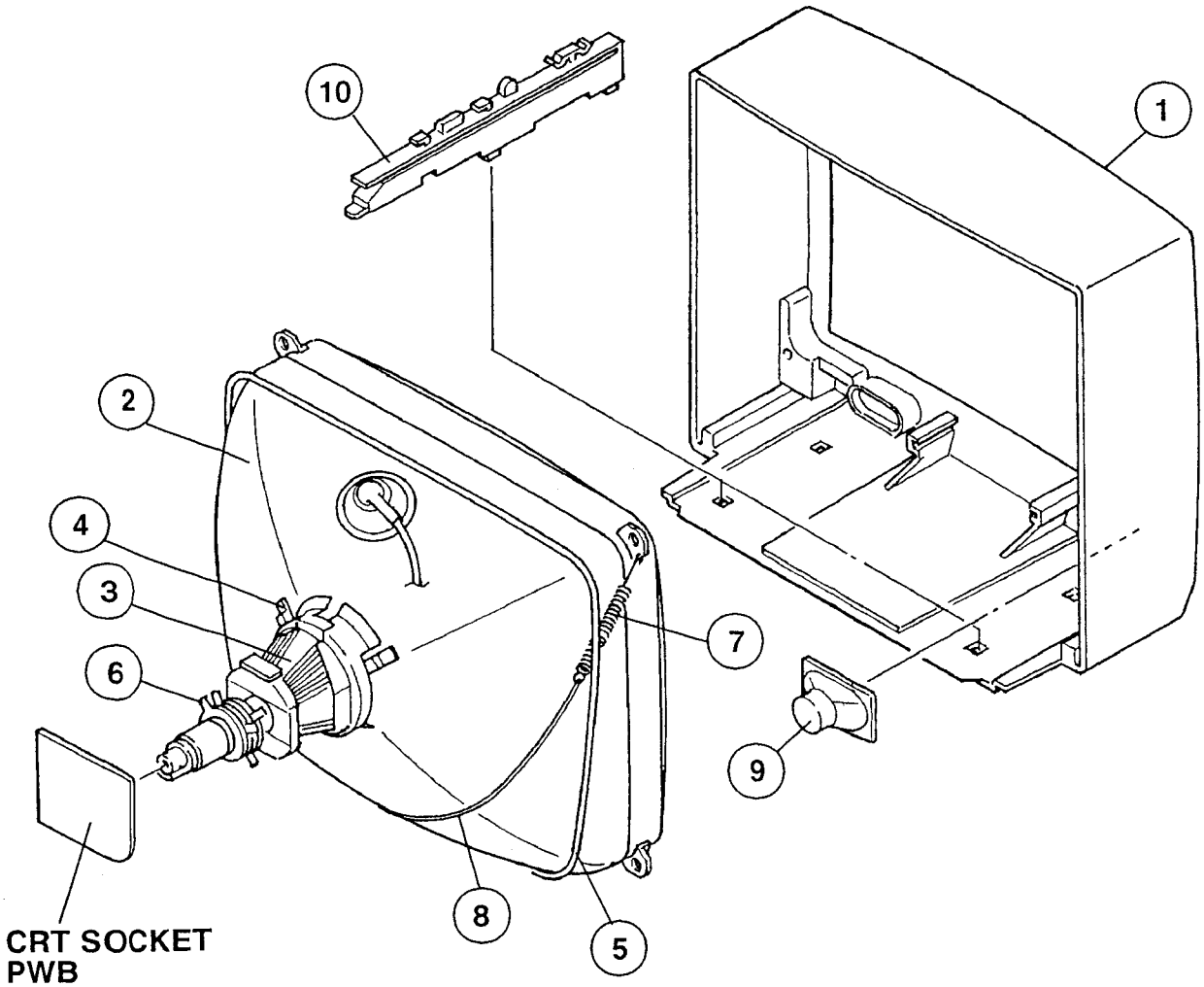
USING P.W. BOARD

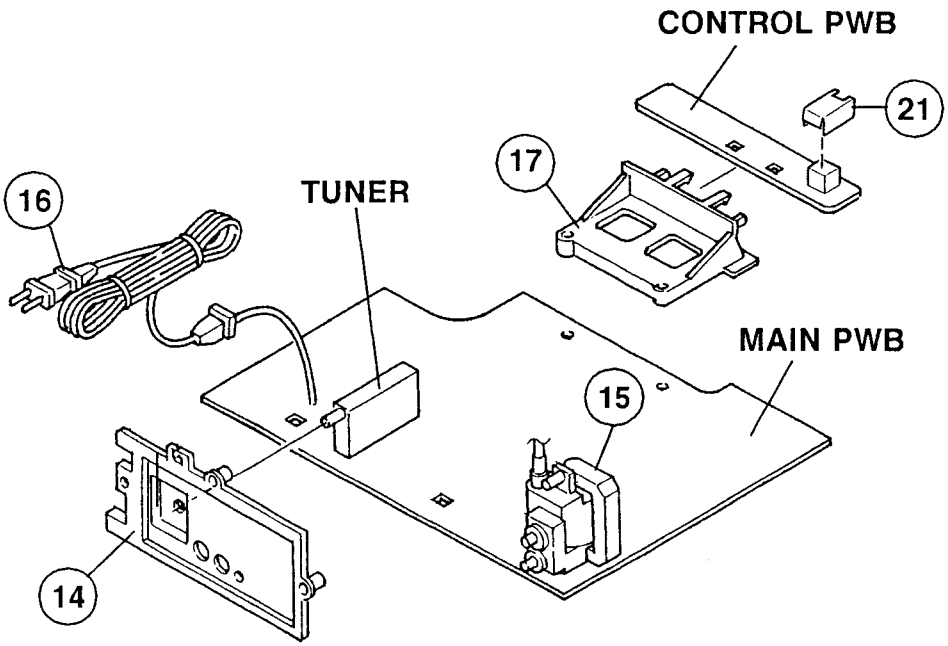
Model / P.W.B ASS'Y	America Models [US]	Canada Models [CA]
	C-20CL5 C-20WL5	C-20CL5
MAIN P.W. ASS'Y	SGL-1102A-H2	SGL-1602A-H2

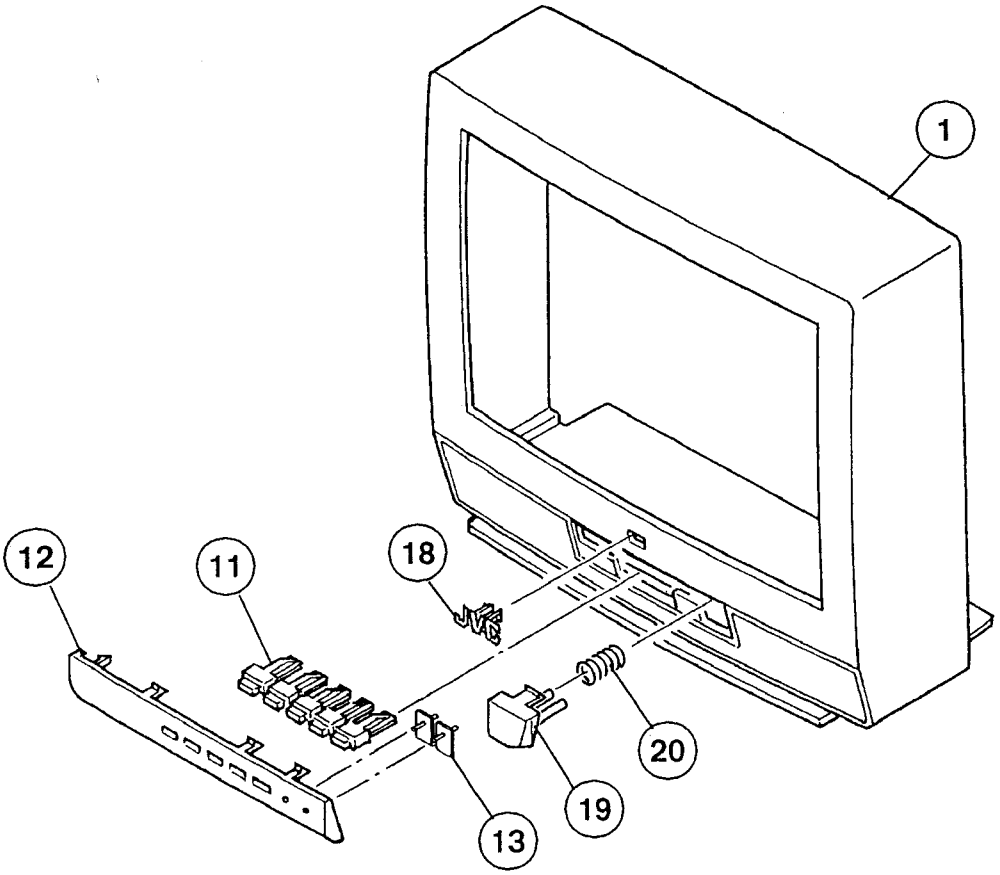
EXPLODED VIEW PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
⚠	1	CM12519-A0E-MH	FRONT CABI ASSY	CHARCOAL(C-20CL5)	
⚠	1	CM12519-C0B-MH	FRONT CABI ASSY	WHITE(C-20WL5)	
⚠	2	A51KSV73X	PICTURE TUBE	V01	
⚠	3	CJ28011-00A	DEF YOKE	DY01	
	4	CE42153-00AJ1	WEDGE ASSY	×3	
⚠	5	CELD041-003J6	DEG COIL	L01	
	6	CE42378-00A	P.C.MAGNET		
	7	A48457-3-H	SPRING		
	8	CHGB0016-0B-FH	BRAIDED ASSY		
⚠	9	CEBSF09D-03KJ4	SPEAKER	SP01	
	10	CM35934-C01-VH	CHASSIS RAIL	×2	
	11	CM35937-A01-H	PUSH KNOB	CHARCOAL(C-20CL5)	
	11	CM35937-002-H	PUSH KNOB	WHITE(C-20WL5)	
	12	CM22748-D01-H	CONTROL WINDOW	CHARCOAL(C-20CL5)	
	12	CM22748-002-H	CONTROL WINDOW	WHITE(C-20WL5)	
	13	CM35938-A01-H	LED LENS		
⚠	14	CM22750-B01-VH	TERMINAL BOARD	CHARCOAL(C-20CL5)	
⚠	14	CM22750-B02-VH	TERMINAL BOARD	WHITE(C-20WL5)	
⚠	15	CJ27963-00BJ1	FBT	T1522	
⚠	16	QMP1490-170J5	POWER CORD	CHARCOAL(C-20CL5)	
⚠	16	QMP1499-170J5	POWER CORD	WHITE(C-20WL5)	
	17	CM35935-B01-VH	CONTROL HOLDER		
	18	CM43094-006-H	JVC MARK	CHARCOAL(C-20CL5)	
	18	CM43094-007	JVC MARK	WHITE(C-20WL5)	
	19	CM35936-B01-H	POWER KNOB	CHARCOAL(C-20CL5)	
	19	CM35936-002-H	POWER KNOB	WHITE(C-20WL5)	
	20	CM35235-004-H	SPRING		
	21	CM48009-001-H	REMOCON MIRROR	C-20WL5 ONLY	
⚠	22	CM12521-C01-MH	REAR COVER	CHARCOAL(C-20CL5)	
⚠	22	CM12521-C02-MH	REAR COVER	WHITE(C-20WL5)	
	23	GBSF4016Z-H	W.TAP SCREW	×8	
⚠	24	CM22794-001-H	RATING LABEL	US	
⚠	24	CM22558-001-H	RATING LABEL	CA	

EXPLODED VIEW



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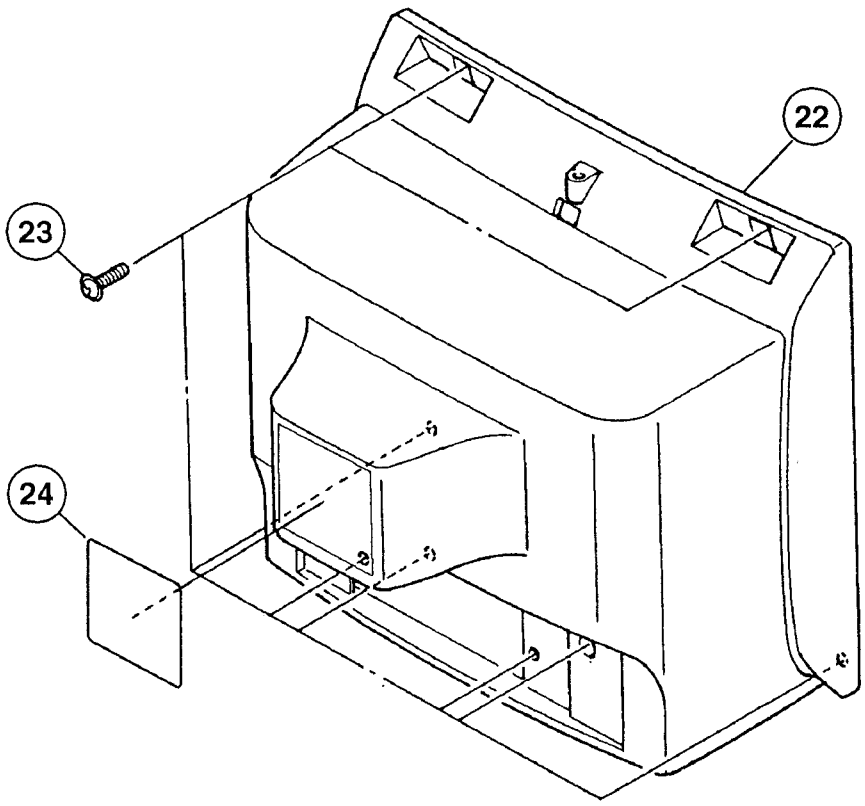
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PRINTED WIRING BOARD PARTS LIST

Regarding the main PW Board Ass'y [SGL-1602A-H2] for the model for canada, refer to page 27.

MAIN PW BOARD ASS'Y (SGL-1102A-H2) [US]

⚠	Symbol No.	Part No.	Part Name	Description			Local
	VARIABLE RESISTOR						
	R1106	QVPA603-473AZ	V R(NOISE)	47kΩ	B		
	R1352	QVPE805-502H	V R(B-CUT OFF)	5kΩ	B		
	R1354	QVPE805-502H	V R(G-CUT OFF)	5kΩ	B		
	R1356	QVPE805-502H	V R(R-CUT OFF)	5kΩ	B		
	R1369	QVPE805-201H	V R(G-DRIVE)	200 Ω	B		
	R1371	QVPE805-201H	V R(R-DRIVE)	200 Ω	B		
	R1428	QVPE611-503HZ	V R(V.HEIGHT)	50kΩ	B		
	R1444	QVPE611-503HZ	V R(V.LINE.)	50kΩ	B		
	RESISTOR						
	R1057	QRG029J-470A	OM R	47 Ω	2W	J	
	R1357-59	QRG019J-153S	OM R	15kΩ	1W	J	
	R1360-62	QRZ0107-472Z	C R	4.7kΩ	1/2W	K	
	R1429	QRX019J-1R2S	MF R	1.2 Ω	1W	J	
⚠	R1461	QRX029J-2R7A	MF R	2.7 Ω	2W	J	
	R1501	QRG019J-471S	OM R	470 Ω	1W	J	
	R1513	QRG029J-472A	OM R	4.7kΩ	2W	J	
	R1524	QRG039J-181A	OM R	180 Ω	3W	J	
⚠	R1529	QRG029J-821A	OM R	820 Ω	2W	J	
⚠	R1530	QRG029J-391A	OM R	390 Ω	2W	J	
⚠	R1533	QRX029J-2R2	MF R	2.2 Ω	2W	J	
⚠	R1543	QRD129J-4R7S	C R	4.7 Ω	1/2W	J	
⚠	R1561	QRX029J-3R9A	MF R	3.9 Ω	2W	J	
	R1599	QRG039J-273A	OM R	27kΩ	3W	J	
	R1615	QRD129J-4R7S	C R	4.7 Ω	1/2W	J	
	R1663	QRD149J-680S	C R	68 Ω	1/4W	J	
	R1665	QRD149J-101S	C R	100 Ω	1/4W	J	
	R1903	QRG019J-181S	OM R	180 Ω	1W	J	
⚠	R1911	QRF074K-1R8	UNF R	1.8 Ω	7W	K	
⚠	R1923	QRD149J-330S	C R	33 Ω	1/4W	J	
	R1924	QRD149J-391S	C R	390 Ω	1/4W	J	
	R1925	QRX029J-2R7	MF R	2.7 Ω	2W	J	
⚠	R1926	QRF204J-161	UNF R	160 Ω	20W	J	
⚠	R1998	QRC121K-275UZ	COMP.R	2.7MΩ	1/2W	K	
⚠	RB1501	QRZ0101-005	R D BLOCK				
	RB1701	QRB045J-103	NETW.R	10kΩ			
	CAPACITOR						
	C1006	CECN004-102	NET CAP.	1000 p F			
	C1054	QEM61EK-106MZ	E CAP.	10 μ F	25V	K	
	C1057	QEM51CM-108M	E CAP.	1000 μ F	16V	M	
	C1107	QFV71HJ-474MZ	TF CAP.	0.47 μ F	50V	J	
	C1111	QFV71HJ-224MZ	TF CAP.	0.22 μ F	50V	J	
	C1115	QFV71HJ-105MZ	TF CAP.	1 μ F	50V	J	
	C1117	QFLC1HJ-104MZ	M CAP.	0.1 μ F	50V	J	
	C1151	QCT25CH-270AZ	C CAP.	27 p F	50V	J	
	C1156	QFV71HJ-224MZ	TF CAP.	0.22 μ F	50V	J	
	C1202-03	QFLC1HJ-103MZ	M CAP.	0.01 μ F	50V	J	
	C1204	QFV71HJ-124MZ	TF CAP.	0.12 μ F	50V	J	
	C1207	QFLC1HJ-104MZ	M CAP.	0.1 μ F	50V	J	
	C1213	QEN61HM-225Z	BP E CAP.	2.2 μ F	50V	M	
	C1214	QCT25CH-101AZ	C CAP.	100 p F	50V	J	
	C1237	QETC0JM-107Z	E CAP.	100 μ F	6.3V	M	
	C1271-73	QFLC1HJ-104MZ	M CAP.	0.1 μ F	50V	J	
	C1275	QEN61HM-335Z	BP E CAP.	3.3 μ F	50V	M	
	C1303	QFLC1HJ-223MZ	M CAP.	0.022 μ F	50V	J	
	C1304	QCT25CH-100AZ	C CAP.	10 p F	50V	J	
	C1306	QFN32AK-472ZJ1	M CAP.	4700 p F	100V	K	
	C1307	QFLC1HJ-183MZ	M CAP.	0.018 μ F	50V	J	
	C1361	QCZ0121-102M	C CAP.	1000 p F	3000V	P	

⚠	Symbol No.	Part No.	Part Name	Description	Local
	CAPACITOR				
	C1423	QFLC1HJ-103MZ	M CAP.	0.01μF 50V J	
	C1431	QEE61VK-105BZ	TAN.CAP.	1μF 35V K	
	C1432-33	QETC1VM-107Z	E CAP.	100μF 35V M	
	C1435	QCT25CH-270AZ	C CAP.	27pF 50V J	
⚠	C1462	QETC1VM-227Z	E CAP.	220μF 35V M	
	C1507	QFLC1HJ-103MZ	M CAP.	0.01μF 50V J	
	C1512	QFLC1HJ-473MZ	M CAP.	0.047μF 50V J	
	C1521	QFN32AK-472ZJ1	M CAP.	4700pF 100V K	
	C1523	QFN32AK-822ZJ1	M CAP.	8200pF 100V K	
⚠	C1526	QFZ0117-9801L	MPP CAP.	9800pF1.4kVH ±2.5%	
⚠	C1528	QETB2CM-107	E CAP.	100μF 160V M	
⚠	C1529	QFZ0119-404L	MPP CAP.	0.4μF 200V ±3%	
⚠	C1534	QETB1CM-228	E CAP.	2200μF 16V M	
⚠	C1541	QETC2EM-106Z	E CAP.	10μF 250V M	
⚠	C1542	QETC1VM-107Z	E CAP.	100μF 35V M	
⚠	C1562	QETC1EM-477Z	E CAP.	470μF 25V M	
	C1572	QCT25CH-101A	C CAP.	100pF 50V J	
	C1609	QFLC1HJ-103MZ	M CAP.	0.01μF 50V J	
	C1616	QFLC1HJ-473MZ	M CAP.	0.047μF 50V J	
	C1701	QEKC1CM-476MZ	E CAP.	47μF 16V M	
	C1703	QEKC1HM-104GMZ	E CAP.	0.1μF 50V M	
	C1704	QCT25CH-560AZ	C CAP.	56pF 50V J	
	C1705	CECN005-101	NET CAP.	100pF	
	C1713	CECN005-101	NET CAP.	100pF	
	C1716	QFLC1HJ-223MZ	M CAP.	0.022μF 50V J	
	C1725	QFLC1HJ-104MZ	M CAP.	0.1μF 50V J	
	C1736	QFLC1HJ-823MZ	M CAP.	0.082μF 50V J	
	C1738-39	QCT25CH-330AZ	C CAP.	33pF 50V J	
	C1740	QFN31HJ-222ZJ1	M CAP.	2200pF 50V J	
	C1741	QFN31HJ-562ZJ1	M CAP.	5600pF 50V J	
⚠	C1906	QFZ9036-104M	MF CAP.	0.1μFAC250V M	
⚠	C1907	QFZ9036-473M	MF CAP.	0.047μFAC250V M	
⚠	C1911	QCZ9030-472U	C CAP.	4700pFAC125V Z	
⚠	C1913	QCZ9030-472U	C CAP.	4700pFAC125V Z	
⚠	C1915	QEZ0169-337M	E CAP.	330μF 200V-40+85	
⚠	C1921	QETC2CM-106Z	E CAP.	10μF 160V M	
⚠	C1998	QCZ9029-103M	C CAP.	0.01μFAC125V M	
⚠	C1999	QCZ9029-103M	C CAP.	0.01μFAC125V M	
	TRANSFORMER				
⚠	T1521	CE41106-00CJ1	DRIVE TRANSF.		
⚠	T1522	CJ27963-00BJ1	FBT		
⚠	T1902	CE41741-002J1	POWER TRANSF.		
	COIL				
	L1101	CELP055-220Z	PEAKING COIL	22μH	
	L1102	CELP041-R82	PEAKING COIL	0.82μH	
	L1103	CELP055-220Z	PEAKING COIL	22μH	
	L1104	CELP057-150Z	PEAKING COIL	15μH	
	L1105	CELP055-100Z	PEAKING COIL	10μH	
	L1106	CE42452-003	COIL		
	L1111	CELP041-R56	PEAKING COIL	0.56μH	
	L1260	CELP055-8R2Z	PEAKING COIL	8.2μH	
	L1262	CELP055-330Z	PEAKING COIL	33μH	
	L1351	CELP055-181Z	PEAKING COIL	180μH	
⚠	L1541	CELC901-100J6	HEATER CHOKE	10μH	
⚠	L1542	CE41210-00B	LINEARITY COIL		
	L1701-05	CELP055-4R7Z	PEAKING COIL	4.7μH	
	DIODE				
	D1001	MTZJ33(A)-T2	ZENER DIODE		
	D1002	MTZJ9.1(B)-T2	ZENER DIODE		
	D1201-06	1SS133-T2	SI.DIODE		
	D1221-22	1SS133-T2	SI.DIODE		
	D1223	MTZJ15(A)-T2	ZENER DIODE		
	D1001	MTZJ33(A)-T2	ZENER DIODE		
	D1002	MTZJ9.1(B)-T2	ZENER DIODE		

⚠	Symbol No.	Part No.	Part Name	Description	Local
	D I O D E				
	D1201-06	1SS133-T2	SI.DIODE		
	D1221-22	1SS133-T2	SI.DIODE		
	D1223	MTZJ15(A)-T2	ZENER DIODE		
	D1229	1SS133-T2	SI.DIODE		
	D1230	MTZJ5.6(A)-T2	ZENER DIODE		
	D1231-32	1SS133-T2	SI.DIODE		
	D1260	1SS133-T2	SI.DIODE		
	D1261	MTZJ5.1(A)-T2	ZENER DIODE		
	D1291-93	1SS133-T2	SI.DIODE		
	D1296	MTZJ15(A)-T2	ZENER DIODE		
	D1299	1SS133-T2	SI.DIODE		
	D1421	MTZJ7.5(B)-T2	ZENER DIODE		
	D1422	MTZJ11(A)-T2	ZENER DIODE		
	D1423-24	1SS133-T2	SI.DIODE		
	D1431	1SR35-100-T3	SI.DIODE		
	D1441-42	MTZJ33(A)-T2	ZENER DIODE		
⚠	D1461	RGP10J(C1)-T3	SI.DIODE		
	D1501	MTZJ9.1(B)-T2	ZENER DIODE		
	D1511	RGP10J(C1)-T3	SI.DIODE		
⚠	D1531	RGP10J(C1)-T3	SI.DIODE		
⚠	D1541	RH1S-T3	SI.DIODE		
⚠	D1543	1SS81-T2	SI.DIODE		
⚠	D1551	MTZJ7.5S-T2	ZENER DIODE		
⚠	D1552	1SS133-T2	SI.DIODE		
	D1556	1SR35-100-T3	SI.DIODE		
⚠	D1561	RGP10J(C1)-T3	SI.DIODE		
	D1601	1SS133-T2	SI.DIODE		
	D1602	MTZJ15(A)-T2	ZENER DIODE		
	D1650	1SS133-T2	SI.DIODE		
	D1701-03	1SS133-T2	SI.DIODE		
	D1704	MTZJ5.6(A)-T2	ZENER DIODE		
	D1705	1SS133-T2	SI.DIODE		
	D1707	1SS133-T2	SI.DIODE		
	D1709-10	1SS133-T2	SI.DIODE		
	D1711	SLR-342VR-T	L.E.D.(RED)		
	D1712	SLR-342DU-T	L.E.D.(ORG)		
	D1716	1SS133-T2	SI.DIODE		
	D1901	1SS146-T2	SI.DIODE		
⚠	D1911	S4VB60-L15	BRIDGE DIODE		
	D1950-53	1SR35-100-T3	SI.DIODE		
	D1991	1SR35-100-T3	SI.DIODE		
	T R A N S I S T O R				
	Q1050	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1101	2SA562TM(Y)-T	SI.TRANSISTOR		
	Q1210	2SA562TM(Y)-T	SI.TRANSISTOR		
	Q1220	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1230	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1240	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1250	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1270	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1280	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1291-92	2SA562TM(Y)-T	SI.TRANSISTOR		
	Q1351-53	2SC4722(NP)	SI.TRANSISTOR		
	Q1521	2SC2655(Y)-T	SI.TRANSISTOR		
⚠	Q1522	2SD1554-C1	SI.TRANSISTOR	H.OUT	
	Q1650	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1701	2SC1815(YG)-T	SI.TRANSISTOR		
	Q1702	2SC1740S(QR)-T	SI.TRANSISTOR		
	Q1901	2SA562TM(Y)-T	SI.TRANSISTOR		
	Q1902	2SC1815(YG)-T	SI.TRANSISTOR		
	I C				
	IC1001	AN78L05-Y	I.C.		
	IC1101	LA7580	I.C.(MONO-ANA)		
	IC1102	TA78L005AP-Y	I.C.(H)		

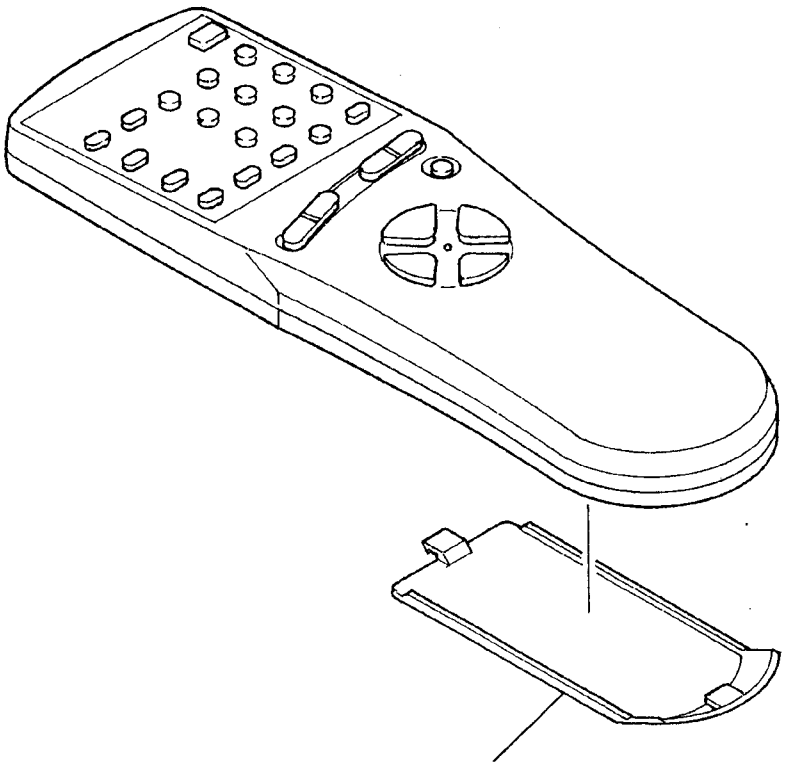
⚠	Symbol No.	Part No.	Part Name	Description	Local
	I C				
	IC1201	TA8801AN	I.C.(MONO-ANA)		
	IC1203	MC14011BCP	I.C.(DIGI-MOS)		
	IC1204	LA7213	I.C.		
	IC1260	BA7612N	I.C.(MONO-ANA)		
⚠	IC1401	LA7837	I.C.(MONO-ANA)		
⚠	IC1602	AN5265	I.C.		
	IC1701	HC-337M	IFR DETECT UNIT		
	IC1702	MN1873237JKH6	I.C.		
	IC1703	AT93C56-10PC	I.C.		
	IC1710	L78LR05E-MA	I.C.(MONO-ANA)		
⚠	IC1921	STR30130	I.C.(H)		
	O T H E R S				
		CM45870-002-H	SHIELD PLATE		
		CM35833-A01-H	LED HOLDER		
	CF1101	CE41505-001	CERAMIC FILTER		
	CF1102	A74603-C-Z	CERAMIC FILTER		
	CF1104	FCR5.71M2SF	CER.RESONATOR		
	CF1110	FTP47.25MA	CERAMIC TRAP		
	CF1501	CSB503F30-T2	C RESONATOR		
	CF1701	CSA12.0MT	CER.RESONATOR		
⚠	F1901	QMF0007-5R0J1	FUSE	5.0A	
⚠	F1911	QMF0007-1R25J1	FUSE	1.25A	
	FC1001	CEMG002-001Z	FUSE CLIP		
	FC1011	CEMG002-001Z	FUSE CLIP		
	J1402	CEMN065-004	PIN JACK		
	J1404	CEMN065-001	PIN JACK		
	K1543	CE41169-002J2	BEADS CORE		
	K1704-06	CE42050-001Z	CORE		
⚠	LF1901	CE42209-00AJ1	LINE FILTER		
	MD1270	CE42396-001	BPF.DL MODULE		
⚠	RY1901	CESK023-001	RELAY		
	S1201	QSL6A13-C01	LEVER SWITCH	SERVICE SW	
	S1701	QSP1A11-C18Z	PUSH SWITCH	CH+	
	S1702	QSP1A11-C18Z	PUSH SWITCH	CH-	
	S1703	QSP1A11-C18Z	PUSH SWITCH	FUNCTION	
	S1705	QSP1A11-C18Z	PUSH SWITCH	VOL+	
	S1706	QSP1A11-C18Z	PUSH SWITCH	VOL-	
	S1707	QSP4H11-C16	SWITCH	POWER	
	SF1101	CE41706-201	SAW FILTER		
⚠	SK1001	CE41603-001J1	CRT SOCKET		
⚠	TH1901	CEKP001-001J1	P.THERMISTOR		
⚠	UV1001	CEEK255-B01	TUNER		
⚠	VA1901	ERZ-C10VK361G	VARISTOR		
	X1301	CE41651-001Z	CRYSTAL		

MAIN PW BOARD ASS'Y(SGL-1602A-H2) [CA]

Regarding the parts list for the main PW board ass'y [SGL-1602A-H2] of the model for canada, only the different parts from those of the model [SGL-1102A-H2] are described. For further details regarding the other parts, refer to the parts list of the model [SGL-1102A-H2] described on page 24 through page 27.

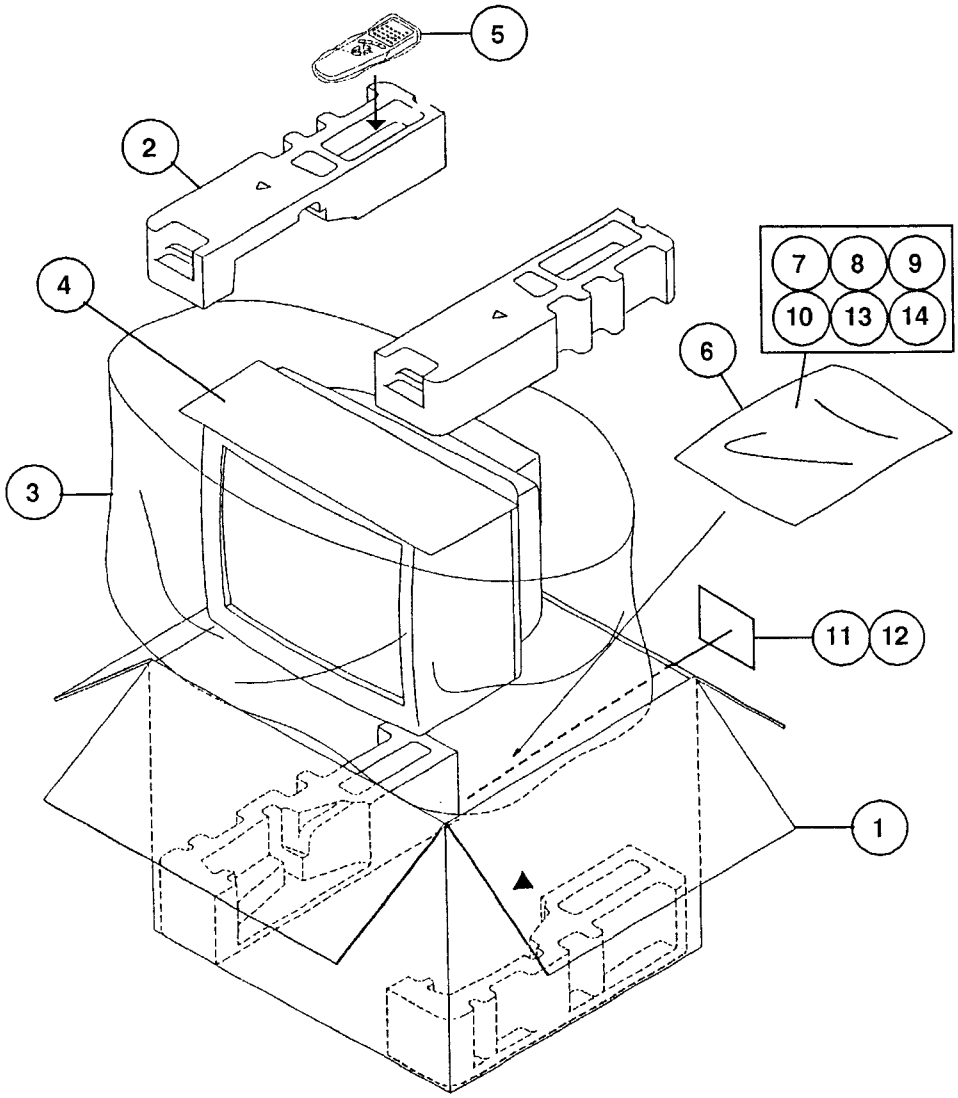
⚠	SYMBOL No.	PARTS No.		PARTS NAME	REMARKS
		America Model(US) SGL-1102A-H2	Canada Model(CA) SGL-1602A-H2		
⚠	LF1901	CE42209-00AJ1	CE41506-00BJ1	LINE FILTER	
	R1728	QRD161J-103Y	———		
⚠	R1998	QRC121K-275UZ	QRC121K-275EZ	COMP. R.	2.7MΩ 1/2W K
⚠	C1998	QCZ9029-103M	050IM-BW	BUS WIRE	
⚠	C1999	QCZ9029-103M	QCZ9029-472M	C. CAP.	4700pFAC125V M

REMOTE CONTROL UNIT (RM-C475-01-H)
(RM-C475W-01-H)



BATTERY COVER
UR52EC1149(RM-C475-01-H)
UR52EC1149A(RM-C475W-01-H)

PACKING



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description	Local
	1	CP10974-060-H	PACKING CASE	C-20CL5(US)	
	1	CP10974-061-H	PACKING CASE	C-20WL5(US)	
	1	CP10974-062-H	PACKING CASE	C-20CL5(CA)	
	2	CP11308-00B-H	CUSHION ASSY	4pcs in 1set	
	3	CP30545-001-H	SET COVER		
	4	CP30544-001-H	TOP COVER		
	5	RM-C475-01-H	REMOCON UNIT	CHARCOAL(C-20CL5)	
	5	RM-C475W-01-H	REMOCON UNIT	WHITE(C-20WL5)	
	6	QPGA025-04005H	POLY.BAG		
	7	CE42024-00BJ1	MATCHING BOX	US ONLY	
⚠	8	C13,20L5UIBA-H	INST BOOK	US	
⚠	8	C13,20L5CIBA-H	INST BOOK	CA	
	9	BT-51006-1H	REGISTRATION CARD	US	
⚠	10	CM36042-00A-H	ROD ANTENNA	US ONLY	
⚠	11	CP30702-001	REC KEEPING CARD	US	
	12	CM47385-00A	POS,SERIAL LABEL	CA	
	13	BT-20025L-H	WARRANTY CARD	CA	
	14	BT-20071B-H	SVC CENTER LIST	CA	

C-20CL5(US&CA)/C-20WL5(US) STANDARD CIRCUIT DIAGRAM

■NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the ⚠symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal :Color bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒20μS/div
:V ⇒5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL[EXAMPLE]

•In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

•Resistance value
No unit :[Ω]
K :[KΩ]
M :[MΩ]

•Rated allowable power
No indication :1/6[W]
Others :As specified

•Type
No indication :Carbon resistor
OMR :Oxide metal film resistor
MFR :Metal film resistor
MPR :Metal plate resistor
UNFR :Uninflammable resistor
FR :Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

•Capacitance value
1or higher :[pF]
less than 1 :[μF]

•Withstand voltage
No indication :DC50[V]
Others :DC withstand voltage[V]
AC indicated :AC withstand voltage[V]

* Electrolytic Capacitors
47/50[Example]:Capacitance value[μF]/withstand voltage[V]

•Type
No indication :Ceramic capacitor
MY :Mylar capacitor
MM :Metalized mylar capacitor
PP :Polypropylene capacitor
MPP :Metalized polypropylene capacitor
MF :Metalized film capacitor
TF :Thin film capacitor
BP :Bipolar electrolytic capacitor
TAN :Tantalum capacitor

(3)Coils

No unit :[μH]
Others :As specified

(4)Power Supply

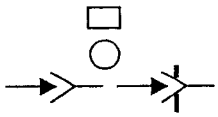
:B1(130.0V)
:B2(12V)
:9V
:5V

* Respective voltage values are indicated.

(5)Test Point

: Test point
: Only test point display

(6)Connecting method


: Connector
: Wrapping or soldering
: Receptacle

(7)Ground symbol

: LIVE side ground
: ISOLATED(NEUTRAL) side ground
: EARTH ground
: DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (primary : ⊥) side GND and the ISOLATED (neutral : ⏚) side GND. Therefore, care must be taken for the following points.

(1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.

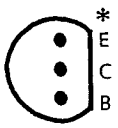
(2) Do not short between the LIVE side GND and ISOLATED side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

Apr. 1994 No.50842

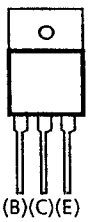
SEMICONDUCTOR SHAPES (* = Bottom view)

TRANSISTORS

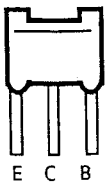


2SA562TM(Y)
2SA673(C)
2SC2655(Y)
2SC1360
2SC1959
2SC1906
2SC2482(C1)
2SB774(RS)
2SC4722(NP)
2SC1815(YG)

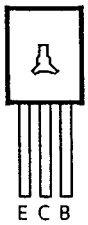
2SA933S(QR)
2SC1740S(QR)
2SC2785(JH)



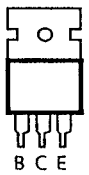
2SD1554-C1



2SC4502

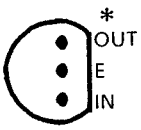


2SC3271(NP)

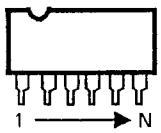


2SC2073

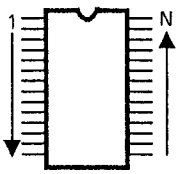
ICs



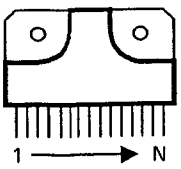
TA78L005AP
TA78L009AP
TA78L012AP
AN78L05
AN78L09
AN78L12



XRA15128N
BA7612N



TA8725N-J
TA8601BNV
MN152121JGM2
CXA1124AS
TA8725AN
MN1872013JGU3
TA8801AN
MN1873237JKH6



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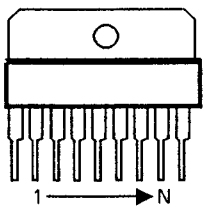
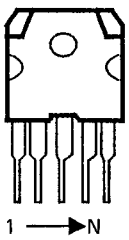
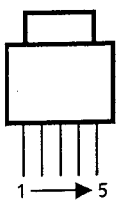
UPC1488H
LA7837



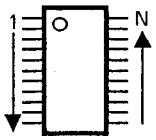
AN5265



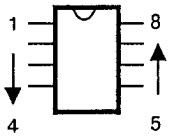
STR30130



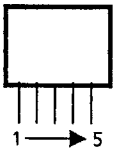
L78LR05E-MA



LA7580



ST93C46AB1
AT93C56-10PC



LA7213

■ CHANNEL CHART(US)

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
○	○	VL	02	02	I
			03	03	
			04	04	
			05	05	
			06	06	
		VH	07	07	II
			08	08	
			09	09	
			10	10	
			11	11	
			12	12	
			13	13	
×	○	MID	A	14	I
			B	15	
			C	16	II
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	IV
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
×	○	ULTRA	W+35	71	IV
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	II
			A-2	98	
			A-1	99	
○	×	UHF	14 ~ 69		IV

TOTAL 180CH
{ VHF 124CH
UHF 56CH

NOTE;
TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIED.

CHANNEL CHART(CA)

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
○	○	VL	02	02	I
			03	03	
			04	04	
			05	05	
			06	06	
		VH	07	07	II
			08	08	
			09	09	
			10	10	
			11	11	
			12	12	
			13	13	
×	○	MID	A	14	II
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	III
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	IV
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

MODE TV	MODE CATV	BAND	CHANNEL REAL	CHANNEL DISP.	TUNER BAND
×	○	ULTRA	W+35	71	IV
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
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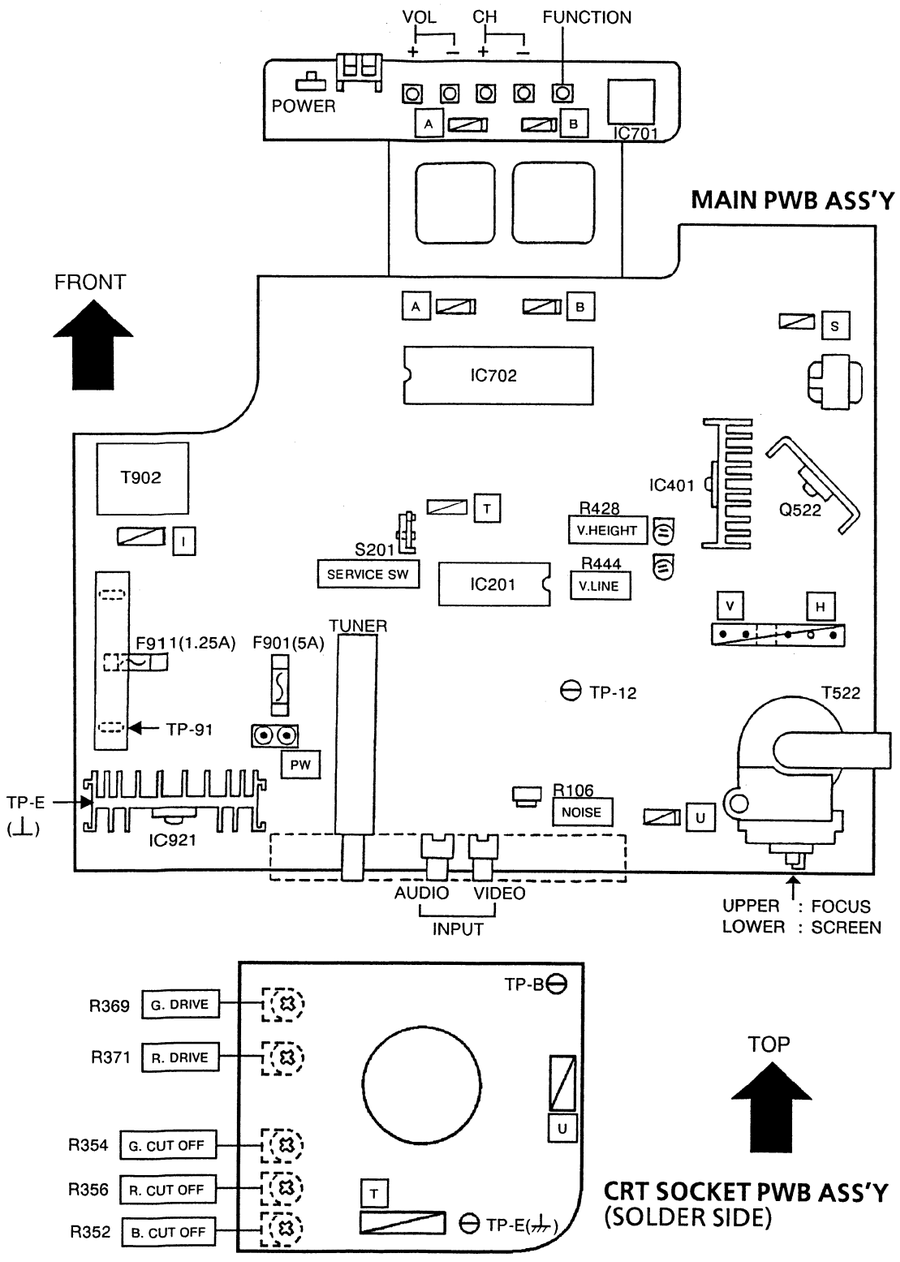
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	II
			A-2	98	
			A-1	99	
○	×	UHF	14 ~ 69		IV

TOTAL 180CH
{ VHF 124CH
UHF 56CH

MAIN PARTS LOCATION AND ALIGNMENT LOCATION

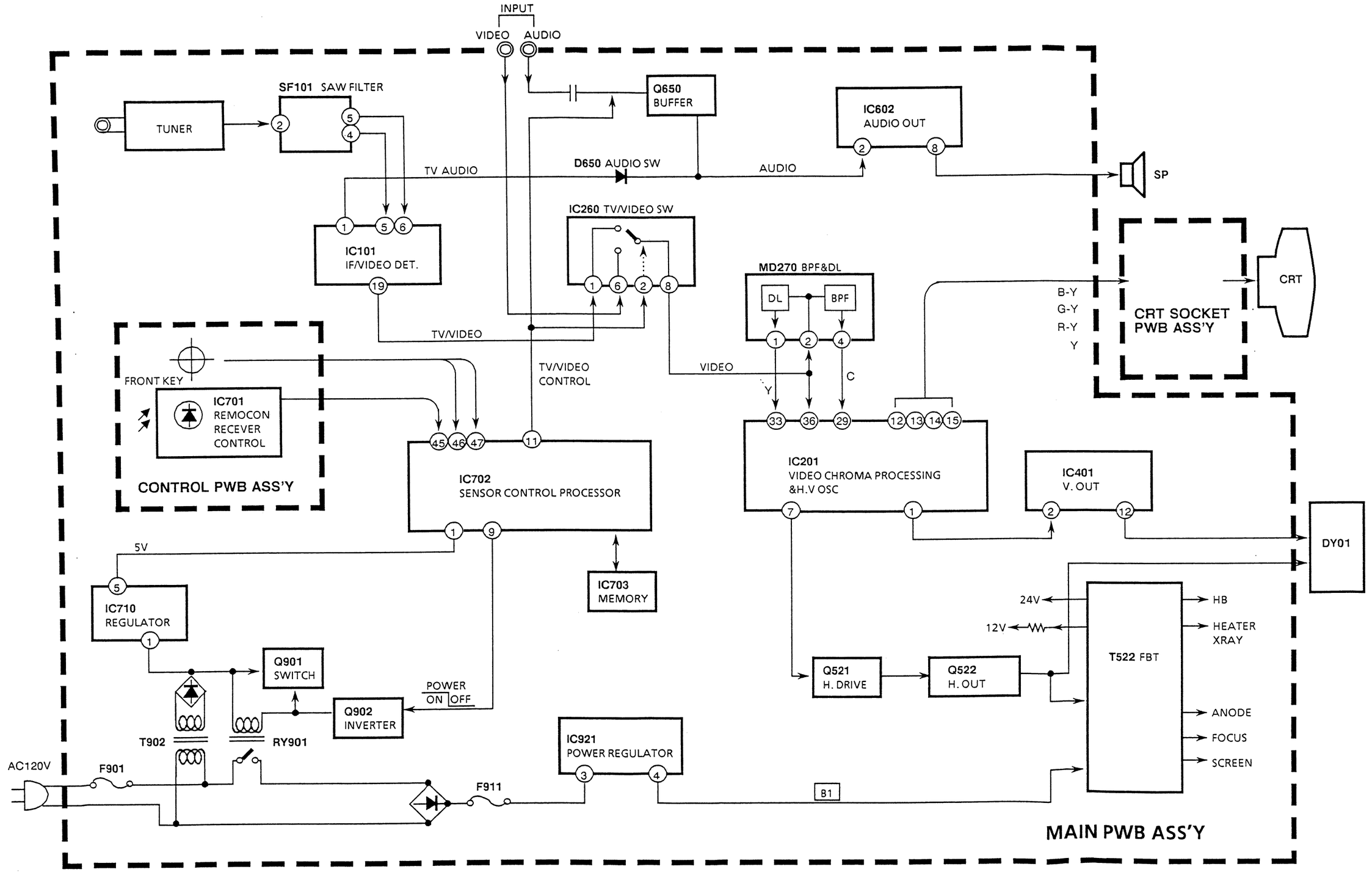


WIRING LIST

P.W.B. or PART NAME	CONNECTOR NAME	WIRING	CONNECTOR NAME	P.W.B. or PART NAME
MAIN PWB ASS'Y	T	⟷	T	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	U	⟷	U	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	I	⟷	WIRE	DEG. COIL
MAIN PWB ASS'Y	H	⟷	WIRE	DEF. YOKE
MAIN PWB ASS'Y	V	⟷	WIRE	DEF. YOKE
MAIN PWB ASS'Y	S	⟷	WIRE	SPEAKER
MAIN PWB ASS'Y	PW	⟷	——	POWER CORD
MAIN PWB ASS'Y	A	⟷	A	CONTROL PWB ASS'Y
MAIN PWB ASS'Y	B	⟷	B	CONTROL PWB ASS'Y
CRT SOCKET PWB ASS'Y	CRT EARTH	⟷	EARTH WIRE	CRT

C-20CL5	C-20CL5
C-20WL5	C-20WL5

BLOCK DIAGRAM

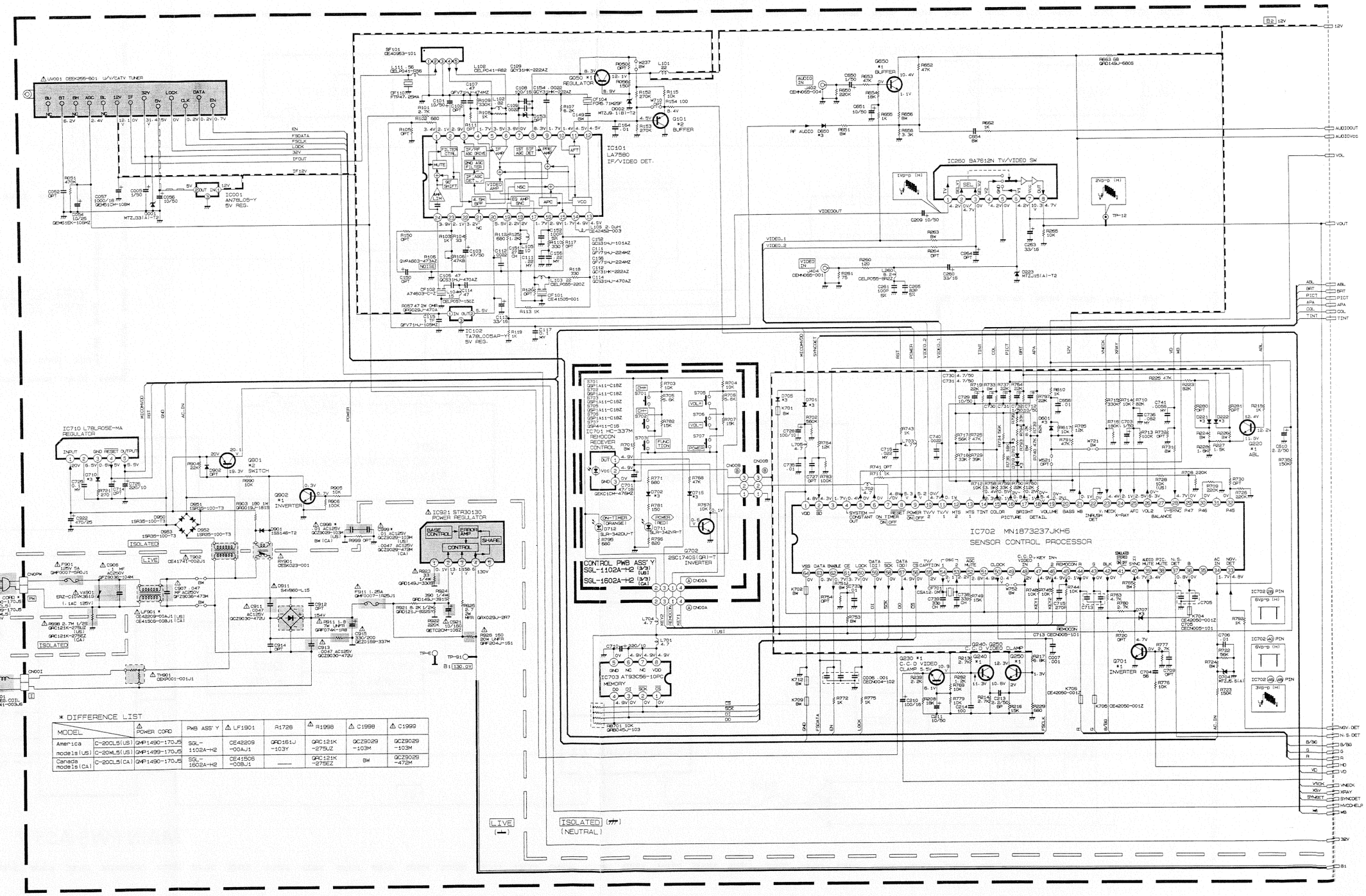


CIRCUIT DIAGRAMS AND PWB PATTERNS

MAIN PWB, CRT SOCKET PWB, CONTROL PWB CIRCUIT DIAGRAMS

This schematic diagram applies to both (US) and (CA) models.

Refer to the Difference List in the diagram regarding the differing points between the models.

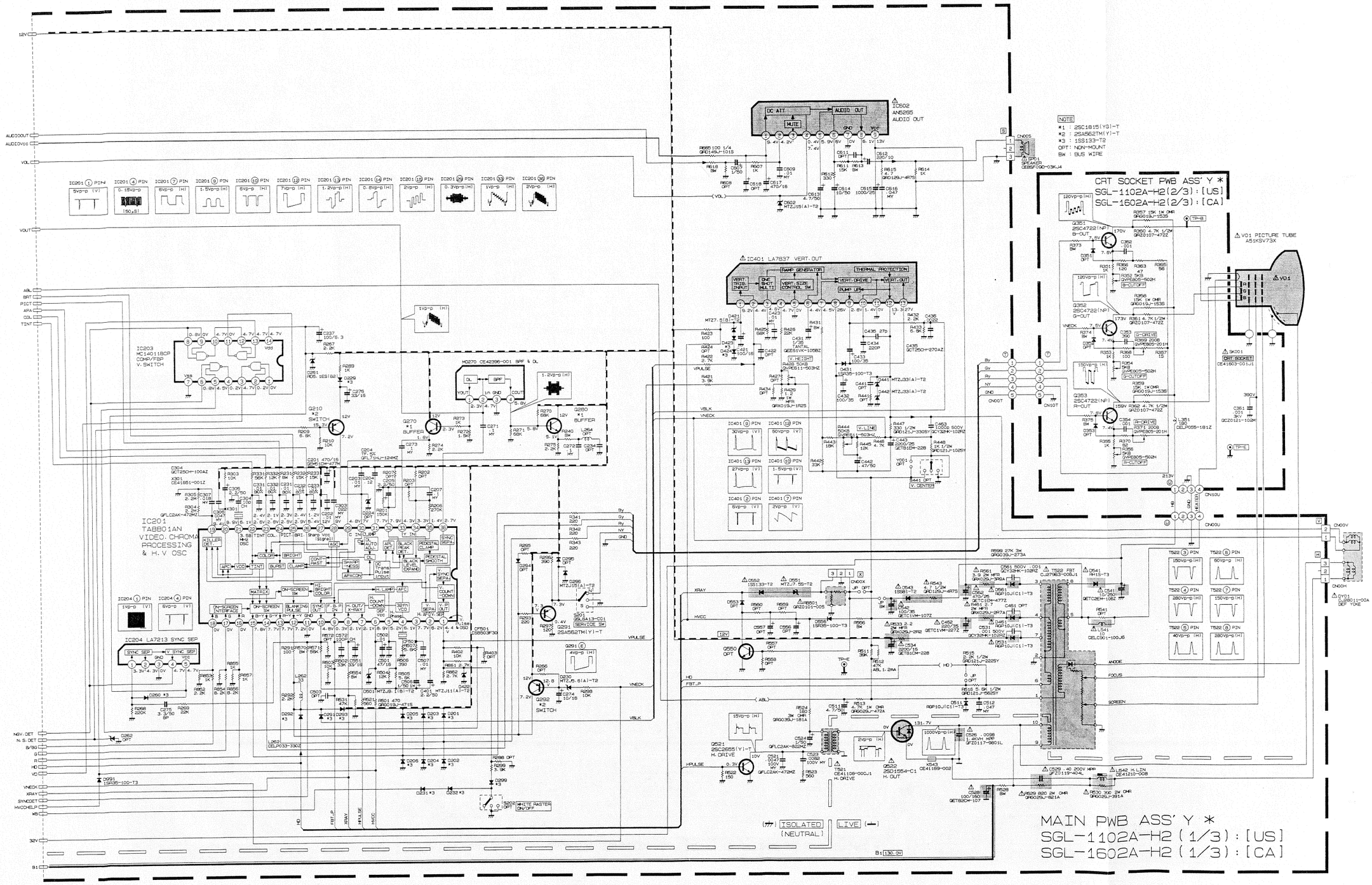


* DIFFERENCE LIST

MODEL		⚠ POWER CORD	PWB ASS'Y	⚠ LF1901	R1726	⚠ R1998	⚠ C1998	⚠ C1999
America models(US)	C-20CL5(US)	QMP1490-170J5	SGL-1102A-H2	QE42209-00AJ1	QRD161J-103Y	QRC121K-275UZ	QCZ9029-103M	QCZ9029-103M
	C-20WL5(US)	QMP1499-170J5						
Canada models(CA)	C-20CL5(CA)	QMP1490-170J5	SGL-1602A-H2	QE41505-00BJ1	——	QRC121K-275EZ	BW	QCZ9029-472M

C-20CL5
C-20WL5

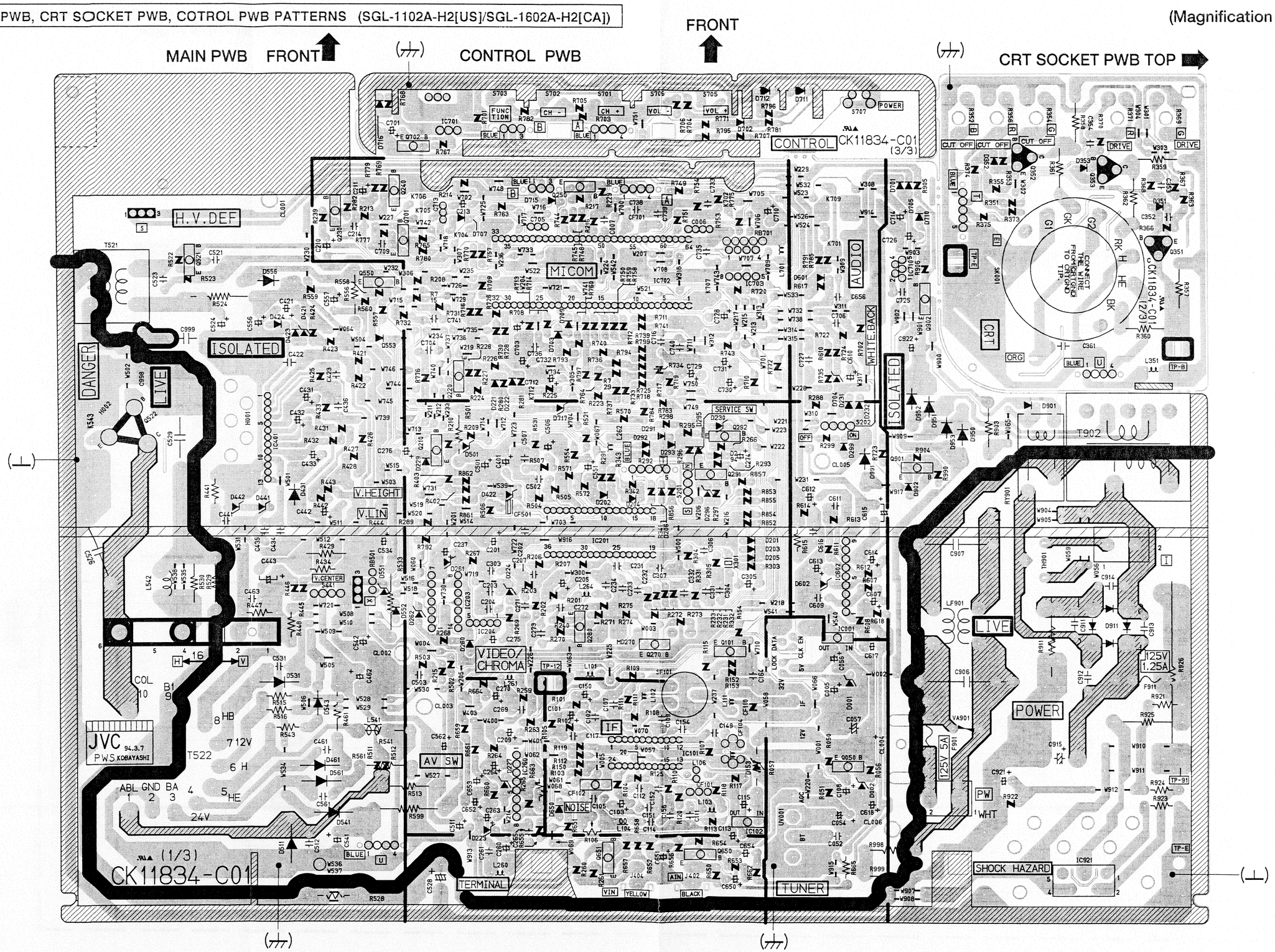
Refer to the following PW Board pattern. : MAIN PWB PATTERN 2-13page, CRT SOCKET PWB PATTERN 2-13page, CONTROL PWB PATTERN 2-13page.



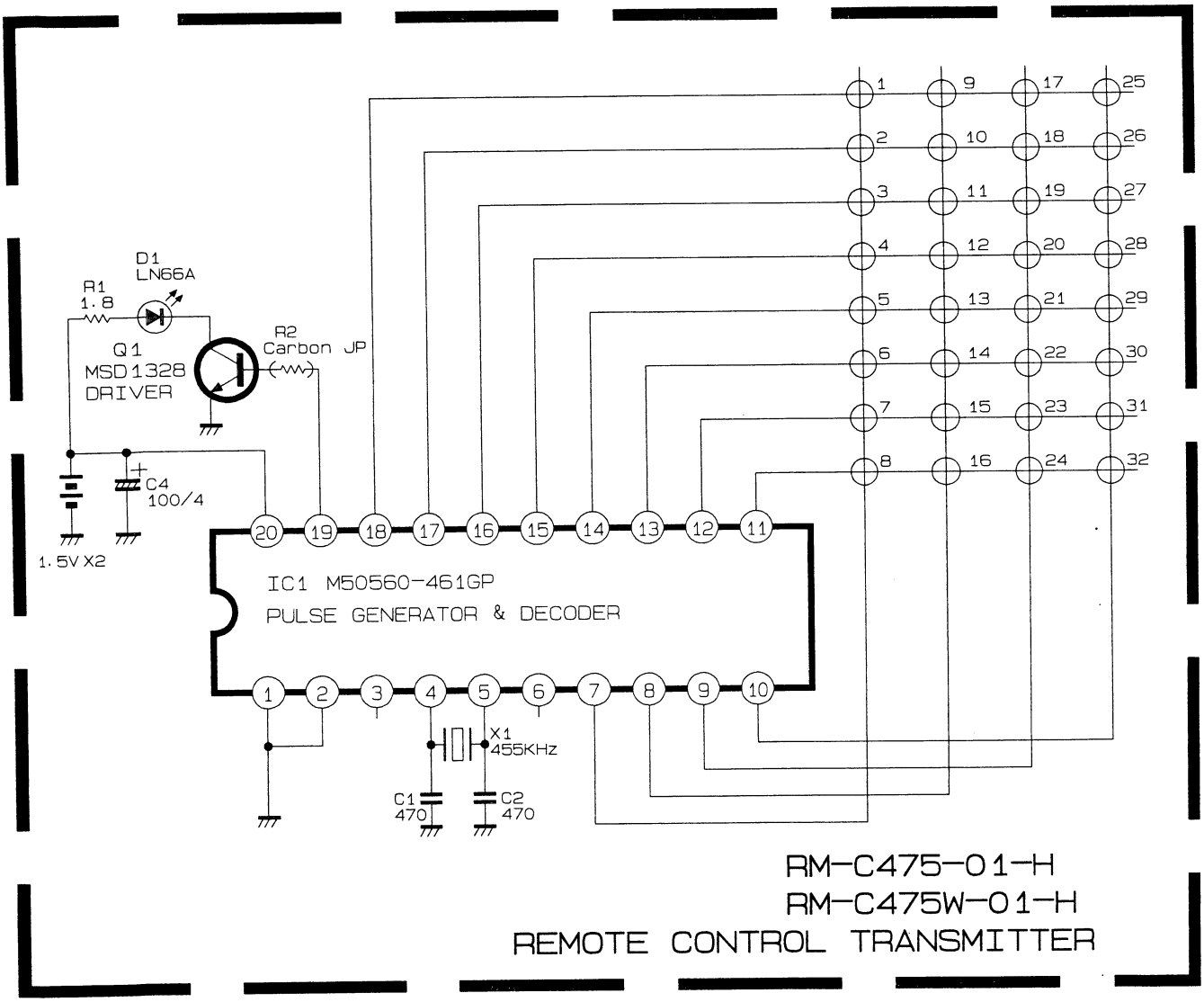
C-20CL5 C-20WL5	C-20CL5 C-20WL5

MAIN PWB, CRT SOCKET PWB, COTROL PWB PATTERNS (SGL-1102A-H2[US]/SGL-1602A-H2[CA])

(Magnification Rate 93%)



REMOTE CONTROL TRANSMITTER CIRCUIT DIAGRAM [RM-C475-01-H/RM-C475W-01-H]



■ KEY FUNCTION

No.	Key name	No.	Key name	No.	Key name
1	CH−	12	FUNCTION+	23	FUNCTION (△)
2	4	13	RETURN	24	2
3	7	14	VOL+	25	----------
4	RECALL CHOICE	15	MUTE	26	CLOSED CAPTION
5	100	16	3	27	MAIN/SAP
6	CH+	17	FUNCTION (▽)	28	ANT/CABLE
7	AVSTATUS/RESET	18	5	29	TV/VIDEO
8	1	19	8	30	MENU
9	POWER	20	FUNCTION−	31	C1/C2
10	6	21	0	32	DISPLAY
11	9	22	VOL−		